Billing Code

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R2–ES–2018–0104; FF09E21000 FXES11110900000 212]

RIN 1018–BD35

Endangered and Threatened Wildlife and Plants; Endangered Status for the Beardless Chinchweed and Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine that the beardless chinchweed (*Pectis imberbis*) is an endangered species under the Endangered Species Act of 1973 (Act), as amended, and designate critical habitat. In total, approximately 10,604 acres (4,291 hectares) in Pima, Cochise, and Santa Cruz Counties, Arizona, fall within the boundaries of the critical habitat designation.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule is available on the Internet at *http://www.regulations.gov* under Docket No. FWS–R2–ES–2018–0104 and at *https://www.fws.gov/southwest/*. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at *http://www.regulations.gov* under Docket No. FWS–R2–ES–2018–0104.

The coordinates or plot points or both from which the maps are generated are included in the administrative record for this critical habitat designation and are available at *http://www.regulations.gov* under Docket No. FWS–R2–ES–2018–0104, at *https://www.fws.gov/southwest/*, and at the Arizona Ecological Services Field Office (see **FOR**

FURTHER INFORMATION CONTACT). Any additional tools or supporting information that we developed for this critical habitat designation will also be available at the Service website and Field Office set out above, and may also be included in the preamble and/or at *http://www.regulations.gov*.

FOR FURTHER INFORMATION CONTACT: Jeff Humphrey, U.S. Fish and Wildlife Service, Arizona Ecological Services Field Office, 9828 North 31st Avenue, #C3, Phoenix, AZ 85051-2517. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species may be listed as endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered or threatened species can only be completed by issuing a rule. Further, under the Act, any species that is determined to be an endangered or threatened species requires critical habitat to be designated, to the maximum extent prudent and determinable. Designations and revisions of critical habitat can only be completed by issuing a rule.

What this document does. This rule lists the beardless chinchweed (*Pectis imberbis*) as an endangered species and designates critical habitat for this species under the Act.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that the beardless chinchweed faces the following threats: Competition from a nonnative grass species (Factors A and E); altered fire regime exacerbated by nonnative grass invasion (Factors A and E); altered precipitation, drought, and

temperature (Factors A and E); erosion, sedimentation and burial from road and trail maintenance, mining, livestock trampling and soil disturbance, and post-wildfire runoff (Factors A and E); summer and fall grazing from wildlife and livestock (Factor C); and small population size exacerbating all other stressors (Factor E). The existing regulatory mechanisms are not adequate to address these threats such that the species does not meet the Act's definition of an endangered or a threatened species (Factor D).

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species.

The critical habitat we are designating in this rule, in eight units comprising 10,604 acres (4,291 hectares), constitutes our current best assessment of the areas that meet the definition of critical habitat for the beardless chinchweed.

Economic analysis. In accordance with section 4(b)(2) of the Act, we prepared an economic analysis of the impacts of designating critical habitat. We made the draft economic analysis available for public comments on December 6, 2019 (84 FR 67060).

Peer review and public comment. We sought the expert opinions of four independent and knowledgeable specialists regarding the species status assessment (SSA) report and received responses from two reviewers. These peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA. We also considered all comments and information we received from the public during the comment period for the proposed listing of, and the proposed designation of critical habitat for, the beardless chinchweed.

Previous Federal Actions

Supporting Documents

A species status assessment (SSA) team prepared an SSA report for the beardless chinchweed. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species.

On December 6, 2019, we published in the *Federal Register* a proposed rule (84 FR 67060) to list the beardless chinchweed as an endangered species and to designate critical habitat for the species under the Act (16 U.S.C. 1531 et seq.). The December 6, 2019, rule also proposed to list Bartram's stonecrop (*Graptopetalum bartramii*) as a threatened species with a rule under section 4(d) of the Act. We will address our proposal to list Bartram's stonecrop (*Graptopetalum bartramii*) as a threatened species with a rule issued under section 4(d) of the Act in a separate, future *Federal Register* document. Please refer to that proposed rule for a detailed description of previous Federal actions concerning the beardless chinchweed that occurred prior to the proposal's publication.

Summary of Changes From the Proposed Rule

In preparing this final rule, we reviewed and fully considered comments from the public on our December 6, 2019, proposed rule regarding beardless chinchweed. We updated the beardless chinchweed SSA report (to version 2.0) based on comments and additional information provided during the comment period, and those updates are reflected in this final rule, as follows:

(1) We included updated survey information provided to the Service including the 2019 Coronado National Memorial indicating an increase in the Visitor Center population, and other reports of additional occurrences received.

(2) We included additional information regarding critical habitat designation along the United States/Mexico border and coordination with Customs and Border Protection.

(3) We included additional information we received regarding the date of discovery of a population.

(4) We made many small, nonsubstantive clarifications and corrections throughout the SSA report and this rule, including under *Summary of Biological Status and Threats*, in order to ensure better consistency, clarify some information, and update or add new references.

However, the information we received during the comment period for the proposed rule did not change our determination that the beardless chinchweed is an endangered species.

Summary of Comments and Recommendations

In our December 6, 2019, proposed rule (84 FR 67060), we requested that all interested parties submit written comments on the proposal by February 4, 2020. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposed determination, proposed designation of critical habitat, and draft economic analysis. Newspaper notices inviting general public comment were published in the Arizona Daily Star on December 9, 2019, and the Sierra Vista Herald on December 13, 2019. We did not receive any requests for a public hearing. All

substantive information provided during the comment period either has been incorporated directly into the final rule or is addressed below.

Peer Reviewer Comments

In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought the expert opinions of four appropriate specialists regarding the SSA report. We received responses from two specialists, which informed the SSA report and this final rule. The purpose of peer review is to ensure that our listing determinations and critical habitat designations are based on scientifically sound data, conclusions, and analyses. The peer reviewers have expertise in the biology of, habitat of, and threats to the species.

We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the beardless chinchweed and its critical habitat. The peer reviewers generally concurred with our methods and conclusions, and provided additional information, clarifications, and suggestions to improve the SSA report and final rule. Peer reviewer comments are incorporated into the SSA report and this final rule as appropriate.

Public Comments

We received 17 public comments in response to the proposed rule. We reviewed all comments we received during the public comment period for substantive issues and new information regarding the proposed rule. Nine comments provided substantive comments or new information concerning the proposed listing and designation of critical habitat for the beardless chinchweed. Below, we provide a summary of public comments we received; however, comments that we incorporated as changes into the final rule, comments outside the scope of the proposed rule, and those without supporting information did not warrant an explicit response and, thus, are not presented here. Identical or similar comments have been consolidated and a single response provided.

(1) *Comment*: A commenter claimed that we did not notify the public of the imminent listing of the beardless chinchweed and the public needs more time to respond.

Response: On August 8, 2012, we announced our 90-day finding that a petition to list beardless chinchweed as endangered or threatened under the Act presented substantial information indicating that listing of the species may be warranted (77 FR 47352). At that time, we requested data and information from the public regarding the species to inform our status review and determination if listing is warranted. In response to publication of the 90-day finding, increased interest in beardless chinchweed and its status led to additional surveys and research beginning in 2013. On October 23, 2017, we sent a letter to interested parties, landowners, and Tribes indicating that a species status assessment would be conducted for beardless chinchweed to inform our listing determination, and we again requested scientific and commercial data or other information on the species.

In addition, the species has been included on our National Listing Workplan, which is publicly available on our web site, since 2016. We updated the workplan in May 2019 and listed the 12-month finding for beardless chinchweed as a FY 2018 carryover action. The court-ordered settlement agreement of October 11, 2019, that stipulates delivery of a 12-month finding to the *Federal Register* by November 29, 2019, is also publicly available.

Finally, the December 6, 2019, proposed rule (84 FR 67060) opened a 60-day public comment period on the proposed listing and critical habitat designation for the beardless chinchweed.

As such, we complied with all requirements of the Act and conclude that the public was afforded adequate notice of the proposed listing of the beardless chinchweed.

(2) *Comment*: Three commenters stated that relying on the conservation biology concepts of resiliency, redundancy, and representation to make the proposed listing determination is improper as they are not found in the Act or the Service's implementing

regulations and their meanings are uncertain, creating confusion if criteria for listing are being followed.

Response: The SSA framework is an analytical approach developed by the Service to deliver foundational science for informing decisions under the Act (Smith *et al*. 2018, entire). The SSA characterizes species viability (defined as the ability to sustain populations in the wild over time) based on the best scientific understanding of current and future abundance and distribution within the species' ecological settings using the conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 308–311). To sustain populations over time, a species must have the capacity to withstand: (1) environmental and demographic stochasticity and disturbances (resiliency), (2) catastrophes (redundancy), and (3) novel changes in its biological and physical environment (representation). A species with a high degree of resiliency, representation, and redundancy is better able to adapt to novel changes and to tolerate environmental stochasticity and catastrophes. In general, species viability will increase and the risk of extinction will decrease with increases in resiliency, redundancy, and representation (Smith *et al*. 2018, p. 306). The SSA provides decision-makers with a scientifically rigorous characterization of a species' status and the likelihood that the species will sustain populations over time, along with key uncertainties in that characterization. The beardless chinchweed SSA provides the best available scientific information to guide a determination of whether or not the beardless chinchweed is in danger of extinction now or in the foreseeable future.

Notwithstanding our use of resiliency, redundancy, and representation as scientific concepts helpful in assessing and describing a species' viability and extinction risk, we adhere to all requirements of the Act in making our listing determinations. This includes applying the Act's definitions of an endangered species and a threatened species, as well as an assessment of the 5 listing factors (see *Regulatory Framework*, below).

(3) *Comment*: A commenter noted that, in general, attempts to locate beardless chinchweed since 1983 have been uncommon and that more surveys are needed before a listing decision is made. The commenter suggested that more surveys for beardless chinchweed would result in occurrences discovered, as beardless chinchweed is often difficult to detect.

Response: As required by the Act (16 U.S.C. 1533(b)(1)), we based the listing decision on the best available scientific and commercial information. We have worked in partnership with numerous agencies and organizations to visit most of the known U.S. locations of beardless chinchweed at least once (with some long-term monitoring initiated), as well as a portion of the Mexico populations. Although information from 1983–2010 is limited, we used the best available information regarding the status of the species to assess the species' current and future conditions. The U.S. Forest Service (USFS), National Park Service (NPS), Service, industry surveyors, and other researchers gathering information on beardless chinchweed have increased survey efforts since 2010 in suitable habitat in Arizona and Mexico. At a minimum, recent surveys and research on beardless chinchweed have occurred each year from 2010 to 2017, in 2019, and in 2020. Despite the difficulty of detecting beardless chinchweed, trained botanists are conducting surveys during the bloom period, enhancing the probability of detection.

(4) *Comment*: A commenter stated that the available data are insufficient to show a true decline in the species and that no statistically valid historical population data and minimal recent data were used in the analysis; therefore, there is no credible scientific way to compare beardless chinchweed population health over time.

Response: When making a listing decision for a species, the Service must determine if the best available information indicates that a species is in danger of extinction throughout all or a significant portion of its range (an endangered species) or likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (a threatened species). Although species petitioned for listing or under assessment by the Service

often show a decline in population abundance or distribution, such a decline is not required for the determination of endangered or threatened status for the species.

The best available information for beardless chinchweed indicates 21 separate historical populations across the range of the species. Of these, nine populations have been extirpated, and six populations are extant in southern Arizona. Of the remaining populations in southern Arizona, several populations with historical counts are now reduced in number. For example, 89 individuals occurred along Ruby Road in 1985, and after four separate surveys, 10 individuals were found along this road in 2015. Similarly, the Scotia Canyon population contained 122 individuals in 1993, 35 in 2017, and 40 in 2020. Other populations could not be relocated at all, despite numerous species-specific surveys, and they are presumed extirpated. The condition of six additional populations in Mexico is unknown, but we have concluded the populations in Mexico are extant for the purposes of our analyses. Because of the current low numbers of the species, its limited distribution, and the past, current, and ongoing threats to its existence, we determine that the species is in danger of extinction.

(5) *Comment*: A commenter claimed the Service suppresses location information to bolster the appearance of larger than actual numbers of extirpations and predicts additional populations occur on the west flank of the Huachuca Mountains. The commenter also identified Coronado Cave Trail, Joe's Canyon Trail, and an area west of the State of Texas Mine populations as extant patches. The commenter noted observations of beardless chinchweed in Box Canyon (Westland Resources 2010) and near Washington Camp by NPS in 2015 and recommended we describe the two populations as extant.

Response: The Service has incorporated the best available information regarding beardless chinchweed distribution and abundance, including all historical and current populations. Explicit and precise location information is not included in the SSA in order to reduce or avoid potential risk to the species from plant collection or trampling due to additional foot traffic. The examples mentioned (Coronado Cave Trail, Joe's Canyon Trail, State of Texas

Mine, Washington Camp, and Box Canyon Road) are addressed in the SSA and December 6, 2019, proposed rule (84 FR 67060), and the number of extirpated populations remains the same. We have incorporated the additional occurrence information for Joe's Canyon Trail, State of Texas Mine, and Washington Camp into the SSA report. The occurrence information for the Coronado Cave Trail was included in two other reports cited in the SSA (Westland 2016, p. 4; Sebesta per. comm. 2017).

The Joe's Canyon Trail subpopulation was noted in 1992 but was not observed on three surveys since 2014 (USFWS 2014a, p. 4; Westland 2016, p.4). The commenter notes he observed 30 vigorous plants (at least 53 individuals) at the site in 2012. However, there is no official report, note, photograph, or herbarium documentation of this 2012 sighting. Based on the species' lack of occurrence during three surveys since 2014, we continue to categorize the Joe's Canyon Trail subpopulation as extirpated. We note the Joe's Canyon area is included in the critical habitat designation and look forward to conservation efforts and additional surveys of the site.

The commenter notes he has information regarding a 2015 beardless chinchweed observation by NPS staff near the Washington Camp population. We are aware of, and include in the SSA, a notification of beardless chinchweed possibly being located in 2014 along a road near the historical location of the Washington Camp population (Buckley 2020, pers. comm.). However, there is no written report, communication to a natural resource agency or database, field notes, photograph, or herbarium documentation of the possible 2015 sighting referenced by the commenter. Other surveys at the Washington Camp site in the Patagonia Mountains were unsuccessful in locating beardless chinchweed (Service 2014a, pp. 1–2; Haskins and Murray 2017, pp. 2–3). Therefore, the additional information does not alter our conclusion, that the Washington Camp population is extirpated.

We have visited the Box Canyon site on numerous occasions, and no beardless chinchweed plants have been relocated. The Westland 2010 Box Canyon survey report noted in

the comment refers to 20 individuals of another species, *Graptopetalum bartramii* (Bartram's stonecrop), but does not note beardless chinchweed occurrence. A 2012 report by Westland notes that in 49 person-days of survey for beardless chinchweed in suitable habitat, no plants were located except within the McCleary Canyon area.

(6) *Comment*: A commenter claimed the granite substrate is incorrectly identified habitat for beardless chinchweed but additional substrates, such as mudstones and rhyolite, likely play a role in the species' habitat. The commenter predicted there might be more beardless chinchweed on the west flank of the Huachuca Mountains.

Response: Beardless chinchweed's known occurrences have been found on sunny to partly shaded southern exposures, on eroding limestone or granite soils and rock outcrops. The NPS is currently working on a beardless chinchweed and associated geology map, including additional substrates of mudstones and rhyolite. We expect this map, and the commenter's observations, will be very useful in determining where to conduct future surveys. Between 1990 and 1994, Bowers and McLaughlin took 41 botanical trips into the Huachuca Mountains, including the west flank, adding to the long history of botanical collection there (Bowers and McLaughlin 1996, p. 70). Beardless chinchweed has not been reported from this area at any time historically.

(7) *Comment*: A commenter mentioned that the assumptions regarding the beardless chinchweed's population size and habitat degradation in Mexico might be inaccurate as the areas are remote and relatively undisturbed.

Response: We relied on the best available data regarding population size and habitat conditions in Mexico. The last report of beardless chinchweed in Mexico was from 1940. There are numerous botanical collection trips in Mexico annually, and no beardless chinchweed occurrences have been reported. We sent inquiries regarding this species to 11 researchers familiar with the flora of Chihuahua and Sonora in 2017 and received no information on the status of the species in Mexico. Surveys in the 1990s and in 2017 and 2018 at historical and

potential beardless chinchweed locations in Sonora, Mexico, revealed no beardless chinchweed. The lack of beardless chinchweed in Sonora may be associated with severe overgrazing (Sanchez-Escalante 2019, p. 17).

Five of the six populations in Arizona contain fewer than 50 individuals. Therefore, we concluded that the populations in Mexico, if extant, contain fewer than 50 individuals. In Mexico, rapid expansion of nonnative, invasive plant species and degradation of native plant communities have potential to invade large areas of northern Mexico, including beardless chinchweed sites. We made these conclusions based on the best available science and welcome additional information to inform future Service actions regarding the beardless chinchweed.

(8) *Comment*: A commenter stated that much is unknown about beardless chinchweed and near-future additional surveys in Arizona and Mexico are required to ensure the need for listing and possible resultant economic loss.

Response: We are required by the Act to make our determination solely on the basis of the best commercial and scientific information available at the time, but we do conduct an economic analysis of the impacts of critical habitat designation. The screening memo outlining the results of that analysis is available as a supporting document (IEc 2018, entire). We used the best available information on the range of beardless chinchweed in the SSA report, the December 6, 2019, proposed rule (84 FR 67060), and this final rule. Species-specific surveys have been conducted in the mountain ranges in the U.S. portion of the beardless chinchweed's range. We conclude it is unlikely that large populations remain unaccounted for therein. If we receive new information in the future as a result of additional surveys, we will analyze such information in the course of developing a recovery plan for the species or in 5-year reviews of its status. If we determine that the new information indicates that the species no longer meets the definition of an endangered species, we will promptly begin rulemaking to assign the correct status.

(9) *Comment*: A commenter noted that hundreds of plants and animals are at the northern fringe of their range in southern Arizona and are common and safe in Mexico.

Response: Historical distributions of beardless chinchweed are focused in southern Arizona, with some disjunct populations in northern Mexico. There have been surveys for this species in Mexico, and numerous biologists from Mexico have been consulted regarding its presence in the country. Habitat has been altered extensively in Mexico, and no populations of the beardless chinchweed have been located there; therefore, we do not find the species to be common or safe in Mexico.

(10) *Comment*: A commenter claimed that surveys by Sanchez-Escalante in Mexico were rushed and occurred in the wrong habitat and at the wrong time of year.

Response: The researcher Sanchez-Escalante spent 35 days exploring 55 sites in Sonora and Chihuahua and covered 6,900 kilometers with a team of trained botanists with the specific aim of locating populations of six identified rare plant species in appropriate habitats. No beardless chinchweed plants were located in 10 separate suitable habitats searched, including all historical locations in Sonora. These surveys were conducted during the flowering season in late September when the plants are most visible. Therefore, we conclude the Sanchez-Escalante surveys were conducted using appropriate methods. Thus, we base our current understanding of the beardless chinchweed occurrences in Sonora and Chihuahua on the best available scientific information.

(11) *Comment*: A commenter mentioned regular visitation is necessary to attain information on bloom period, seed production, reproduction method, pollinators, precipitation and growth relationships, and genetic diversity.

Response: We are aware of limited information regarding the life history and species characteristics the commenter mentioned. We are supporting current research into the pollination, breeding systems, demographics, responses to fire and nonnative grass removal and

we are in regular contact with the researchers working with beardless chinchweed. Further studies will inform conservation and recovery efforts for the species.

(12) *Comment*: A commenter indicated that beardless chinchweed colonization of unoccupied habitat patches from known subpopulations has been documented repeatedly since 1993. The commenter opined that population losses are caused by metapopulation dynamics, and the species readily occupies newly disturbed habitat.

Response: The beardless chinchweed has been located in plains, great basin, semi-desert grasslands, oak savanna, and Madrean evergreen woodland, and along disturbed roads, trails, and mining sites within these vegetation communities. Beardless chinchweed groups occurring in these habitats have collectively been counted as single subpopulations or populations since their discoveries, and fluctuations of the number of individuals found have been noted. We have no information on the detection of colonization of unoccupied habitat; we welcome these data from the commenter to inform subsequent Service actions.

(13) *Comment*: A commenter claimed the Service lacks basic knowledge about the biology and habitat requirements of the beardless chinchweed and is not following the mandate to base listing decisions on the best scientific and commercial data available.

Response: We based this final listing determination on the best available scientific and commercial information, and the commenter did not provide any new information for us to consider. The best available information on beardless chinchweed habitat indicates the species does best on eroding soils in native-dominated grasslands. Additional beardless chinchweed biology and habitat research is ongoing, and results will inform future Service actions. In assessing the viability of the beardless chinchweed, the best available scientific and commercial data provide information about some aspects of species' biology and habitat requirements, but may not represent a full and complete knowledge of the species. We drew reasonable conclusions about other aspects of the species' biology and requirements based on similar species, similar habitats, and best available information.

(14) *Comment*: A commenter stated that the Service provides a misleading discussion of the current status of the beardless chinchweed and fails to recognize its life history as a disturbance-dependent and extremely difficult species to detect.

Response: As described in the SSA report, beardless chinchweeed is, and has historically been, found in open, native-dominated desert grasslands, oak savannas, and oak woodlands. This species is also often associated with active disturbances from frequent, low severity wildfire; grazing and browsing of native animals during seed production; and natural erosion of unstable substrates, thus reducing competition. Many historical locations are now dominated by nonnative grasses, have an altered wildfire regime, and no longer support the species. Native-dominated habitats have diverse assemblages of vegetation, each with a different -shaped and -sized canopy and root system, which creates heterogeneity of form, height, and patchiness, and provides openness. This is in contrast to nonnative-dominated habitats, which are unnaturally dense, are evenly spaced, and have an even understory height; burn with regularity; and contain species that compete with beardless chinchweed for space, water, light, and nutrients. The documented invasion of nonnative grasses throughout most of the beardless chinchweed's range has greatly increased competition and altered fire regimes in these areas. Historical populations currently with nonnative grass dominance no longer support beardless chinchweed due to this alteration of habitat. There are currently no extant populations of beardless chinchweed without at least some level of nonnative grass invasion. We acknowledge that the species is difficult to detect. Despite the difficulty of detection, trained botanists are conducting surveys during the bloom period, enhancing the probability of detection.

(15) *Comment*: A commenter claimed the Service did not do due diligence to list threats or make determinations but used the petitioner's list of threats. The commenter also suggested the Service's analysis of stressors is speculative and not based on hard data.

Response: The Service's determination to list the species is based on a thorough review of the best available scientific and commercial information and was subject to appropriate peer

review. The petition identifies livestock grazing as the primary threat to the beardless chinchweed. Our analysis determined nonnative invasion and high-severity fire are the primary threats to the species, with livestock disturbance potentially benefitting the plants at certain times of the year and potentially harming it at other times (summer and fall). We used the best available scientific and commercial information in our analyses.

(16) *Comment*: Three commenters claimed the Service's assumption that nonnative grasses decrease habitat suitability and alter the fire regime is not supported by the data and the method of assessment for the effect of competition with nonnative grasses is unclear. The species persists in nonnative grasslands and has positive population growth following the Monument Fire.

Response: Beardless chinchweed typically occurs on steep, south-facing, sunny to partially shaded hillslopes, with eroding bedrock and open areas with little competition from other plants. Since 2012, many surveys of historically documented beardless chinchweed population areas detected no beardless chinchweed plants. The change in habitat in these areas, with drastic increases in nonnative, invasive grasses that provide limited bare soil needed by beardless chinchweed, indicates that the areas are no longer suitable habitat for this species. Even in areas that support the beardless chinchweed, such as at Coronado National Memorial, biologists report that the beardless chinchweed has not been found in any location dominated by nonnative grasses. In all but a small number of historical populations, nonnative grasses have increased to an extent that they exclude most native species, including beardless chinchweed. Numerous surveys and studies indicate that the beardless chinchweed does not occur in sites heavily impacted by nonnative plants. Surveys for the beardless chinchweed note habitat conditions, including the extent of nonnative grasses.

Historical frequent, low-severity fires in southern Arizona grasslands have been replaced with more frequent and more severe fires due, in part, to the invasion of nonnative plants. Beardless chinchweed grassland habitats have been altered to include nonnative grasses and

hotter fires. The area where the beardless chinchweed occurs at Coronado National Memorial experienced low to moderate severity fire in the Monument Fire in 2011, and in 2019, low severity prescription fire was used as a tool to benefit the beardless chinchweed (BAER 2017, entire; Fitting 2020, pers. comm).

We assessed the effects of competition with nonnative grasses based on habitat conditions reported in surveys of beardless chinchweed populations. The extent of nonnative grasses in the area is negatively associated with beardless chinchweed occurrence. Beardless chinchweed occurs in areas with little natural competition and nonnative grasses are strong competitors for required resources of sunlight, water, and space. Several instances have been reported where surveys of more densely vegetated habitat resulted in no beardless chinchweed found, supporting this species' requirement for little competition (USFWS 2014a, p. 4; USFWS 2014b, p. 1;USFWS 2014 c, p. 4; USFWS 2014d, p. 2; Haskins and Murray 2017, p. 2). In addition, beardless chinchweed has not been found in any location dominated by nonnative grasses on National Park Service lands (National Park Service 2014, p. 4; Janway 2017, pers. comm.).

(17) *Comment*: A commenter indicated that managed livestock and wild ungulate grazing are proven to reduce fuels for fires and requested all language relating to domestic livestock threatening beardless chinchweed be removed from the SSA report and the rule.

Response: Livestock grazing is not noted in the SSA report or the rule as a major threat to the beardless chinchweed. While grazing is not a major threat to the species, the activity does act as a stressor to the beardless chinchweed in some circumstances, and the effect of grazing is analyzed in the SSA report.

Wild ungulate grazing is noted in beardless chinchweed populations. Coues white tail deer (*Odocoileus virginianus* ssp. *couesi*) and javelina (*Pecari tajacu*) were observed in the vicinity of browsed beardless chinchweed plants (USFWS 2015, pp. 1-2). In a 2019 study, researchers reported 75 percent of 785 individuals studied in the population at Coronado

National Memorial showed signs of deer browse (Souther, 2020, p. 1). The loss of flowers in any year equates to a loss of seed production and seed bank storage, and reduction in genetic diversity.

Livestock grazing is expected to have a similar impact. Beardless chinchweed does not flower until it reaches a height of over 1.6 ft tall. Without time and resources to regrow, browsed plants may be unable to attain adequate size for reproduction and are susceptible to impacts from grazing (Phillips *et al*. 1982, p. 8; Falk and Warren 1994, p. 157). Grazing pressure may have contributed to species' rareness due to reduced reproduction and alteration in habitat (Keil 1982, pers. comm.). Overgrazing is considered a stronger influence on beardless chinchweed habitat in Mexico (Fishbein and Warren 1984, p. 20; Sanchez-Escalante 2019, p. 17).

The beardless chinchweed SSA report concludes that grazing in winter or spring when the plant is dormant would increase disturbance and open habitat needed by the beardless chinchweed, while grazing in summer or fall when the plant is growing and flowering could damage plants or reduce seed production.

(18) *Comment*: A commenter recommended using past climate data at a local level rather than modelling projections when discussing climate as a threat.

Response: In the beardless chinchweed SSA report, figure 4.8a-c shows both the past and projected mean daily maximum temperatures in Cochise, Pima, and Santa Cruz Counties, Arizona. The data for past mean daily maximum temperatures also indicate increases in temperature in all three counties. Modeling projections based on the Intergovernmental Panel on Climate Change Fifth Assessment report (IPCC 2014, entire) and future climate projections from the National Climate Explorer Tool (USGS 2017a, entire) downscaled to county level were used to discuss climate change and the effects of current and future changes on beardless chinchweed. Section 4.2 of the SSA (USFWS 2020, pp. 29-42) describes these modelling projections in greater detail.

(19) *Comment*: A commenter noted the degree of disturbance that is harmful versus helpful to the beardless chinchweed needs to be determined through research.

Response: Additional research into the amounts and types of disturbance compatible with the beardless chinchweed would assist with further actions related to the species. Three extant populations occur along roadcuts, and another occurs along a maintained trail. Routine vegetation maintenance along the roads and trails reduces competition from other plants for sunlight and nutrients. However, roadside maintenance could also damage or remove plants. In addition, nonnative plant introduction and spread often occur in areas of disturbance, such as along roadways, along trails, in mining sites, and in areas of recreational use (Gelbard and Belnap 2003, p. 421; Brooks 2007, pp. 153–154; Anderson *et al*. 2015, p. 1). Nonnative grasses compete with beardless chinchweed for space, water, light, and nutrients, and alter wildfire regimes. Many of these historical locations no longer support the beardless chinchweed due to alteration of habitat by nonnative grasses (NPS 2014, pp. 3–4; Service 2014a, pp. 1–2; Service 2014b, entire; Service 2014c, pp. 1–2). Therefore, for the purposes of our analysis, we conclude that the presence of nonnatives following a disturbance is not helpful to the beardless chinchweed.

(20) *Comment*: A commenter stated that demographic and environmental stochasticity are naturally occurring phenomena for which beardless chinchweed plants are very well-adapted.

Response: Demographic and environmental stochasticity are naturally occurring phenomena (Shaffer 1981, p. 131). However, beardless chinchweed populations adapted to naturally occurring phenomena now experience the additional stressors of nonnative grass (competition and altered fire regime) and the effects of a changing climate beyond the scope of normal occurrence. For example, effects due to a changing climate, coupled with other stressors, can have a cumulative impact resulting in greater than anticipated decline in rare species (Souther and McGraw 2014, pp. 1471–1472). In addition, populations that experience variability in abundance must maintain a minimum viable population to be able to repopulate after a

demographic or environmental stochastic event or catastrophe (Holsinger and Falk 1991, p. 45). Rangewide (including Mexico), 11 of the 12 beardless chinchweed populations (83 percent) are small (fewer than 50 individuals). When the effect of small population size exacerbates other stressors beyond those naturally occurring phenomena that beardless chinchweed has adapted to, population abundance may be reduced to the extent that repopulation does not occur.

(21) *Comment*: A commenter stated disturbance (including high intensity grazing, post-wildfire runoff, trail and road maintenance, and mining activities) are not threats to the beardless chinchweed. In addition, one commenter stated that road graders will be banned, yet they create habitat for the species.

Response: The beardless chinchweed likely requires low to moderate intensity disturbance to maintain open habitat. This disturbance includes localized natural erosion of unstable substrates following precipitation events. Grazing could impact beardless chinchweed in small populations with fewer than 50 individuals as flowers removed equate to reduction in genetic diversity and seed production. Many beardless chinchweed plants are precarious in their steep, sunny, erodible habitat, and heavy post-fire flooding and erosion could easily remove or bury plants. The beardless chinchweed is a species negatively affected by competition from other plants, particularly nonnative grasses. Activities that remove soils, increase nonnative plant spread, or reduce habitat for the beardless chinchweed negatively affect the species. Further, under this rule, the use of road graders will not be banned. The use of road graders in activities conducted, funded, permitted, or authorized by Federal agencies and the consequent effects to the beardless chinchweed would be evaluated in a section 7 consultation to ensure that their use is compatible with beardless chinchweed conservation.

(22) *Comment*: Three commenters indicated that the Service's conclusion that small and isolated populations make recolonization of extirpated beardless chinchweed populations unlikely is unsupported.

Response: The current distribution of beardless chinchweed consists of populations widely separated on the landscape, and the plant's seeds are not expected to travel long distances as typical of desert plants in a specialized environment (Van Oudtshoorn and Van Rooyen 2013, p.2). In addition, much of the grassland habitat surrounding known populations has been altered by nonnative plant invasion and no longer supports beardless chinchweed (National Park Service 2014, pp. 3-4; USFWS 2014b, pp. 1-2; USFWS 2014c, entire; USFWS 2014d, pp. 1–2). Throughout the range of the species, beardless chinchweed populations are naturally fragmented between mountain ranges that are many miles away from other mountain ranges, so natural re-establishment is unlikely.

(23) *Comment*: Three commenters were concerned that critical habitat units will be closed off to grazing and livestock will be removed during the growing season on occupied allotments, which may have significant impacts on cattle ranchers, or that the designation of critical habitat will force the U.S. Forest Service to build cattle exclosures. These allotments are dominated by nonnative species with the exception of where the beardless chinchweed occurs. One commenter recommended site-specific analysis to determine the level of management considerations needed.

Response: The largest population of beardless chinchweed occurs on NPS lands and is not grazed by cattle. The USFS currently implements site-specific management for the extant beardless chinchweed sites, and we anticipate they will continue to do so in the future. Of 8 beardless chinchweed populations on USFS lands or portions of USFS lands, 4 populations currently experience some level of grazing. Two populations occur in areas grazed only during March, which is outside of the growing season for the beardless chinchweed (Heitholt 2017a, pers. comm.). Another population is on an allotment that is grazed by cattle in winter and spring, also outside of the flowering period for the beardless chinchweed (Heitholt 2017b, pers. comm.). A fourth population is in a yearlong, deferred rest rotational grazing regime, meaning any growing season use is mitigated with growing season rest the following year; in general, this area

receives less than 25 percent utilization due to topography and distance from water (Heitholt 2018, pers. comm.). Cattle have not grazed another population that occurs partially on USFS lands since 1968 (Wilcox 2017, pers. comm.).

The overlap of grazing allotments with critical habitat units is fairly limited. Within occupied units, two allotments overlap with critical habitat by less than 5 percent of the allotments' land area (IEc 2018, p. 15). Within unoccupied units, one allotment overlaps critical habitat by approximately 7 percent and two allotments overlap by less than 3 percent of the allotments' land area (IEc 2018, p. 15). The USFS will conduct section 7 consultation on the effects of grazing to the beardless chinchweed and designated critical habitat following the listing of the species (see **DATES**, above). Any site-specific adjustments to grazing on allotments will be considered in the consultation process.

(24) *Comment*: A commenter claimed the City of Sierra Vista, Fort Huachuca, and other affected parties were not consulted during the economic analysis process, which was performed too quickly.

Response: For the economic analysis, we considered affected parties to be those that overlap with occurrences of, or are within immediate proximity to, the species (e.g., USFS, NPS, Federal agencies conducting border patrol activities). The City of Sierra Vista and Fort Huachuca are more than 18 miles from any known population of the beardless chinchweed; therefore, we did not seek input from those parties.

(25) *Comment*: A commenter requested the opportunity to verify that their economic analysis comments were incorporated into the final economic analysis.

Response: During the open public comment period on the December 6, 2019, proposed rule (84 FR 67060), we accepted comments on the draft economic analysis for the critical habitat designation for the beardless chinchweed. We considered comments we received on the draft economic analysis. To view the economic analysis, go to *http://www.regulations.gov* and search for Docket No. FWS–R2–ES–2018–0104.

(26) *Comment*: A commenter noted that proposed critical habitat units 1, 2, 6, 7, and 8 were visited during the 2019–2020 winter and that the proposed essential physical and biological features were present within discrete areas within a matrix of high canopy cover grassland primarily dominated by nonnative grasses. They recommended a wording change to indicate special management only in areas where all essential physical and biological features co-occur, as not all of these areas include all proposed essential physical and biological features.

Response: Not all critical habitat units contain all of the essential physical and biological features; in fact, it is unlikely that any beardless chinchweed populations are free of nonnative grasses entirely. The critical habitat units are focused largely on areas that are currently dominated by native species or have a mix of native and nonnative plants (USFS 2017). One goal to conserve the beardless chinchweed is to work toward the reduction of nonnative plants in critical habitat units. If only units with no nonnative species were designated as critical habitat, there would be insufficient habitat to conserve the species.

(27) *Comment*: One commenter is concerned that nonnatives are too extensive to treat outside of small areas.

Response: We understand the challenges of controlling nonnative plants and restoring native grasses to a site. We note that treatment of nonnatives near beardless chinchweed populations is an initial step in conserving the species.

(28) *Comment*: Two commenters stated that we failed to properly identify and use the species' physical and biological features to designate critical habitat. Another commenter stated that the physical and biological features identified in the proposed rule for the beardless chinchweed are general in nature and do not distinguish proposed critical habitat units from vast areas of potential habitat, suggesting there are hundreds of thousands (or more) acres of potential habitat for the species.

Response: The physical and biological features identified for the beardless chinchweed are based on the species' known biology, ecology, and habitat requirements. These include the

habitat required to maintain pollinators, space for expansion and colonization of beardless chinchweed populations, and the need of the species to have open spaces without excessive nonnative grass competition. In unoccupied critical habitat units, not all physical and biological features may be present, but these areas are essential for the conservation of the beardless chinchweed. Southern Arizona grasslands, oak savannas, and evergreen woodlands have been invaded by nonnative plant species to an extensive degree, rendering much of the potential habitat less suitable.

I. Final Listing Determination

Background

Please refer to the December 6, 2019, proposed rule to list and designate critical habitat for the beardless chinchweed (84 FR 67060) and the SSA report for a full summary of species information. Both are available on our Southwest Region website at *https://www.fws.gov/southwest/* and at *http://www.regulations.gov* under Docket No. FWS–R2–ES–2018–0104.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an "endangered species" or a "threatened species." The Act defines an endangered species as a species that is "in danger of extinction throughout all or a significant portion of its range," and a threatened species as a species that is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The Act requires that we determine whether any species is an "endangered species" or a "threatened species" because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

Analytical Framework

The SSA report documents the results of our comprehensive biological status review for the species, including an assessment of the potential threats to the species. The SSA report does not represent a decision by the Service on whether the species should be listed as an endangered or threatened species under the Act. It does, however, provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report; the full SSA report can be found at Docket No. FWS–R2–ES–2018–0104 on *http://www.regulations.gov* and at *https://www.fws.gov/southwest/es/arizona/Docs_Species.htm*.

To assess beardless chinchweed's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics, including an explanation of how the species arrived at its current condition. The final stage of the

SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. This process used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

In this discussion, we review the biological condition of the species and its resources, and the threats that influence the species' current and future condition, in order to assess the species' overall viability and the risks to that viability.

The beardless chinchweed is an erect, many-branched perennial of the Asteraceae (sunflower) family. It occurs on sunny, south-facing slopes in native-dominated grasslands, oak savannas, and oak woodlands in southern Arizona and northern Mexico. The species is particularly susceptible to competition from other plants and is impacted by nonnative, invasive grasses, which outcompete this species for light, water, nutrients, and space, and exacerbate unnatural high-severity fires. Nine populations have been extirpated since 1962, leaving 12 extant populations in Arizona and Mexico. The extirpated sites have high levels of invasion by nonnative grasses. Most populations are very small, with 92 percent of populations throughout the range of the species supporting fewer than 50 individuals. These small populations are particularly vulnerable to extirpation.

The beardless chinchweed occurs between elevations of 3,799 to 5,699 ft. It requires steep, south-facing, sunny to partially shaded hillslopes with open areas and little competition from other plants. To maintain species' viability, populations with multiple subpopulations and overall high abundance must be distributed across the species range and represent a range of environmental conditions. These populations must experience recruitment that exceeds mortality. Beardless chinchweed requires habitat consisting of native-dominated plant communities on eroding limestone or granite bedrock substrate with precipitation adequate for germination, growth and reproduction. The native-dominated plant communities include plains, great basin,

and semi-desert grasslands, oak savanna, or Madrean evergreen woodlands and communities dominated by bunchgrasses with open spacing and little competition from other plants. In addition, these communities must support sufficient beardless chinchweed pollinators (e.g., flies, bees, and butterflies) including plants for pollinator foraging and nesting within pollinator flight distance of beardless chinchweed populations.

Several stressors influence whether beardless chinchweed populations will grow to maximize habitat occupancy, which increases the resiliency of a population to stochastic events. We evaluated the past, current, and future stressors (i.e., negative changes in the resources needed by beardless chinchweed) that influence the viability of the species. These stressors are described in detail in chapter 4 of the SSA report (Service 2020). Stressors that have the potential to affect beardless chinchweed population resiliency include:

- Loss of habitat due to invasion by nonnative species;
- Altered fire regime exacerbated by invasion by nonnative species;
- Altered precipitation, drought, and temperature;
- Erosion, sedimentation, and burial from road and trail maintenance, mining, livestock trampling and soil disturbance, and post-wildfire runoff;
- Grazing from wildlife and livestock; and
- Small population size exacerbating all other stressors.

The largest risk to viability of the species is caused by the loss of habitat from the invasion of nonnative grasses that compete for space, water, light, and nutrients and that alter wildfire regimes. This combination of stressors has resulted in many populations having fewer than 50 individuals remaining, which puts them at risk of extirpation from the primary stressor as well as additional stressors that would not have been a concern under natural conditions. Much of the historical range of the beardless chinchweed in both the United States and Mexico has been altered by an invasion of nonnative grasses and herbaceous plants. Although there are

many nonnative plant species growing in historical beardless chinchweed habitats in both the United States and Mexico, two species in particular are most problematic to the beardless chinchweed at this time: Lehmann's lovegrass (*Eragrostis lehmanniana*) and rose natal (*Melinis repens*). Both of these species are strong competitors on southern exposures where the beardless chinchweed occurs.

Habitat Loss Caused by Nonnative Grasses

Lehmann's lovegrass, a nonnative grass from South Africa, has numerous competitive advantages over native grasses in southern Arizona. Lehmann's lovegrass resprouts from roots and tiller nodes not killed by hot fire, is unhampered by the reduction in mycorrhizae associated with fire and erosion, responds to winter precipitation when natives grasses are dormant, produces copious seed earlier than native grasses, maintains larger seed banks than native grasses, and has higher seedling survival and establishment than native grasses during periods of drought (Anable 1990, p. 49; Anable *et al.* 1992, p. 182; Robinett 1992, p. 101; Fernandez and Reynolds 2000, pp. 94–95; Crimmins and Comrie 2004, p. 464; Geiger and McPherson 2005, p. 896; Schussman *et al*. 2006, p. 589; O'Dea 2007, p. 149; Archer and Predick 2008, p. 26; Mathias *et al*. 2013, entire). This species outcompetes native grasses for water, light, and nutrients, forming nonnative-dominated grasslands that reduce structural, species, and spatial diversity and that produce two to four times the biomass of native grasslands (D'Antonio and Vitousek 1992, p. 70; McPherson 1995, pp. 136–137; VanDevender *et al*. 1997, p. 4; Huang *et al*. 2009, pp. 903–904). This change in vegetation structure results in a higher fuel load that is long-lasting through slow decomposition and results in more frequent fires that have longer flames, faster rates of spread, and higher severity and frequency than historical low-intensity burns of native desert grasslands (Anable *et al*. 1992, p. 186; Dennet *et al*. 2000, pp. 22–23; Williams and Baruch 2000, p. 128; Crimmins and Comrie 2004, p. 464). In addition, Lehmann's lovegrass-dominated grasslands recover quickly from fire, as fires scarify the ample seeds and

remove canopy, allowing for high seedling emergence (Cable 1965, p. 328; Anable 1990, p. 15; Roundy *et al*. 1992, p. 81; McPherson 1995, p. 137; Biedenbender and Roundy 1996, p. 160).

Rose natal, a native of Africa and Madagascar, is invasive in many locations, including southern Arizona and northern Mexico (Stevens and Fehmi 2009, p. 379; Romo *et al*. 2012, p. 34). Similar to Lehmann's lovegrass, rose natal is capable of growing in low moisture situations and has many advantages to outcompete native grasses of southern Arizona, such as prolific seed production and culms that root from the nodes (Stokes *et al*. 2011, p. 527). This aggressive grass displaces native vegetation in shrublands and oak stands, and increases fire frequency (Romo *et al*. 2012, p. 35; Center for Agriculture and Biosciences International 2020, entire).

In addition, several other invasive African grasses and an invasive Asian grass have been documented in southern Arizona and northern Mexico (Van Devender and Reina 2005, p. 160; NatureServe 2020, entire; Fire Effects Information System 2020, entire; SEINet, entire). Other nonnative grasses in Mexico show rapid expansion and degradation of native communities, with the potential to invade large areas of northern Mexico (Arriaga *et al*. 2004, p. 1504). No beardless chinchweed populations in the United States are more than 1 kilometer (km) (0.6 mile (mi)), and no beardless chinchweed populations in Mexico are more than 27 km (16.8 mi), away from documented nonnative grasses (SEINet, entire; Heitholt 2017b, pers. comm.). Because we have documented nonnative infestations in the field in locations not shown in SEINet, we conclude only a small portion of nonnative plants are reported into the SEINet system in either country. Based on the above information, it is unlikely any beardless chinchweed population is free of nonnative plants. This encroachment of nonnatives has reduced beardless chinchweed population numbers and habitat, and as nonnatives continue to encroach on beardless chinchweed populations, the number of individuals and available habitat will continue to decrease.

Altered Fire Regime

The desert grasslands, oak savannas, and oak woodlands of southern Arizona historically had large-scale, low-severity fire roughly every 10 to 20 years and following periods of adequate moisture (McPherson and Weltzin 2000, p. 5; Brooks and Pyke 2002, p. 6; McDonald and McPherson 2011, p. 385; Fryer and Leunsmann 2012, entire). This low-severity disturbance likely benefited beardless chinchweed by maintaining open microhabitats and reducing competition. Fires are now more frequent and intense due to the unnaturally dense and evenly spaced canopies of nonnative-dominated communities (as compared to more open and heterogeneous native-dominated grasslands), coupled with more frequent fire starts from recreationists and cross-border violators (Anable *et al*. 1992, p. 186; D'Antonio and Vitousek1992, p. 75; Dennet *et al*. 2000, pp. 22–23; Williams and Baruch 2000, p. 128; Crimmins and Comrie 2004, p. 464; Emerson 2010, pp. 15, 17; United States Government Accountability Office 2011, p. 1; Wildland Fire Lessons Learned Center 2011, entire). Nonnative grasses have higher seed output and large seed banks, earlier green-up in the spring, and greater biomass production than native grasses; all of these characteristics help to perpetuate a grass-fire cycle (D'Antonio and Vitousek 1992, p. 73; Zouhar *et al*. 2008, pp. 17, 21; Steidl *et al*. 2013, p. 529).

In many locations in southern Arizona in recent decades, repeat fires have occurred within short periods of time, aided by the dominance of nonnative grasses in the landscape. For example, in the Pajarito and Atascosa Mountains area, multiple fires burned the landscape between 2008 and 2016 (figure 4.4 in Service 2020). This landscape is now dominated by both nonnative Lehmann's lovegrass and rose natal (Service 2014b, entire; Heitholt 2017b, pers. comm.), and many historically documented locations that supported beardless chinchweed have not been found again (Service 2014b, entire; Fernandez 2017, pers. comm.; Haskins and Murray 2017, p. 4). High-severity wildfires burn hotter than fires that beardless chinchweed evolved with; consequently, we conclude the plant is not capable of surviving high-severity fires.

Altered Precipitation, Drought, and Temperature

The southwestern United States is warming and experiencing severe droughts of extended duration, changes in amount of snowpack and timing of snow melt, and changes in timing and severity of precipitation and flooding (Garfin *et al.* 2014, entire). The effects of a changing climate are important considerations in the analysis of the stressors to the beardless chinchweed, including increased nonnative competition (described above) during times of low precipitation and drought (Anable 1990, p. 49; Robinett 1992, p. 101; Fernandez and Reynolds 2000, pp. 94–95; Geiger and McPherson 2005, p. 896; Schussman *et al*. 2006, p. 589; Archer and Predick 2008, p. 26; Mathias *et al*. 2013, entire). Low precipitation and drought will also impact moisture availability for beardless chinchweed germination, growth, and flowering. To analyze the effects of a changing climate on beardless chinchweed, we relied on the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment (IPCC 2014, entire) and IPCC Climate Change 2013—The Physical Science Basis (IPCC 2013, entire). Four emission scenarios, referred to as Representative Concentration Pathways (RCPs) were developed for the latest IPCC report (IPCC 2014, p. 57). We evaluated the effects of climate change on the beardless chinchweed using RCP 4.5 and RCP 8.5 to bracket the range of environmental variability. The IPCC report (2014) expresses confidence that emissions will fall within the RCP 4.5 and 8.5 range.

Altered precipitation timing and form (snow versus rain), as well as reduced winter and spring precipitation and prolonged drought, are currently occurring and projected to increase or be altered from normal in the Southwest (Garfin *et al.* 2014, entire). Recently, there has been a decrease in the amount of snowpack, earlier snowmelt, and increased drought severity in the Southwest (Garfin *et al.* 2013, entire; Garfin 2013b, p. 465). Further, more wintertime precipitation is falling as rain rather than snow in the western United States (IPCC 2013, p. 204; Garfin 2013, p. 465). This means that the amount of runoff in the spring when snow melts is reduced, as is soil moisture. Precipitation is bimodal within the mountain ranges where the beardless chinchweed occurs, with dormant season snow and rain, and growing season monsoon

rains. Precipitation during October through March is important for beardless chinchweed germination and growth. In addition, the beardless chinchweed does not flower until it reaches a height of more than 0.5 meter (m) (1.6 feet (ft)) tall; without sufficient precipitation, beardless chinchweed may be unable to attain adequate size for reproduction (Phillips *et al*. 1982, p. 8). Further, reduced precipitation, change in the timing and type of precipitation, and prolonged drought impact soil and ambient moisture availability for beardless chinchweed germination, seedling survival, plant growth, and flowering. In addition, due to increased nonnative competition during times of reduced precipitation and drought, impacts from these stressors to the beardless chinchweed would be exacerbated (Anable 1990, p. 49; Robinett 1992, p. 101; Fernandez and Reynolds 2000, pp. 94–95; Geiger and McPherson 2005, p. 896; Schussman *et al*. 2006, p. 589; Archer and Predick 2008, p. 26; Mathias *et al*. 2013, entire).

Projections of precipitation changes are less certain than those for temperature (Garfin *et al.* 2014, p. 465). Downscaled models project average precipitation will decrease in the southern Southwest where beardless chinchweed occurs, with seasonal changes in precipitation predicted. Projections of change in the mean annual precipitation from 2021 to 2099 range from a decrease of 20 percent to an increase of 8 percent (RCP 8.5 (major effects scenario in the SSA)) and a decrease of 10 percent to an increase of 10 percent (RCP 4.5 (moderate effects scenario in the SSA)), with most models predicted a decline. (Garfin *et al.* 2013, p. 113). Under emissions scenarios of RCP 4.5 and 8.5, reduced winter and spring precipitation is consistently projected for the southern part of the Southwest by 2100, as part of the general global precipitation reduction in subtropical areas (Garfin *et al.* 2014, p. 465). Late winter-spring mountain snowpack in the Southwest is predicted to continue to decline over the 21st century under RCP 4.5 and RCP 8.5 scenarios because of increased temperature (Garfin *et al*. 2013, pp. 118–119). Reduced rain and snow, earlier snowmelt, and drying tendencies cause a reduction in late-spring and summer runoff. Together, these effects, along with increases in evaporation, result in lower soil moisture by early summer (Garfin 2013, p. 117).

Climatic events such as reduced snowpack, earlier snowmelt, and increased drought are regional and will impact all populations of beardless chinchweed. Precipitation timing and amount impacts the germination, growth, and flowering of beardless chinchweed, resulting in the loss of individuals and recruitment, and overall reducing the population size.

In the Southwest, the period since 1950 has been warmer than any period of comparable length in at least 600 years, and average daily temperatures for the 2001–2010 decade were the highest from 1901 through 2010 (Garfin *et al.* 2013, p. 3). Fewer cold waves and more heat waves occurred over the Southwest during 2001–2010 compared to average decadal occurrences in the 20th century. More frequent hot and fewer cold temperature extremes over most land areas are predicted on daily and seasonal timescales, as global mean surface temperature increases (IPCC 2014, p. 58). Heat waves are predicted to occur with a higher frequency and longer duration (IPCC 2014, p. 58). Occasional cold winter extremes will continue to occur (IPCC 2014, p. 60). Surface temperatures in the Southwest are predicted to increase substantially over the 21st century, with more warming in summer and fall than in winter and spring. Summer heat waves will become longer and hotter, while winter cold snaps will become less frequent but not necessarily less severe (Garfin *et al.* 2013, p. 6; Garfin *et al.* 2014, p. 464).

When temperatures rise, evapotranspiration rates also increase and soil moisture decreases. An increase in evapotranspiration results in water loss from the plant and increases stress on the plant. Stress impacts photosynthesis, respiration, transpiration, water use efficiency, leaf conductance, growth rate, vigor, and gas exchange resulting in reduced growth, flowering, and seed production and, therefore, reduced overall recruitment and population numbers. Soil moisture drying in the Southwest is consistent with projected changes in atmospheric circulation and increased surface temperatures with surface drying by the end of this century under the RCP 4.5 and 8.5, with greater changes projected under the RCP 8.5 emissions scenario (Garfin 2013, p. 119). Along with projected warming and increased evapotranspiration, droughts in parts of the Southwest will become hotter, more severe, and more frequent (Garfin *et*

al. 2013, p. 6). Future droughts are projected to be substantially hotter, and for major river basins such as the Colorado River Basin, drought is projected to become more frequent, intense, and longer lasting than in the historical record.

Although rare species in the southwestern United States evolved with drought, recent changes in temperature and rainfall patterns present stressful conditions of increased magnitude greater than what the species faced. Some species may shift their distributions in response to warming of the climate (McLaughlin *et al*. 2002, p. 6070). However, it is highly unlikely that the beardless chinchweed would be able to shift its range naturally to keep up with current and high projected rates of climate change, due to its overall population decline and inability to maintain current populations. Since plants are not mobile, expanding the distribution of this species is dependent on seed dispersal. Further, extant populations are small, which limits the amount of seed production for dispersal. It is highly unlikely that under elevated environmental stress associated with climate change, the species would be able to both maintain populations and colonize new areas with more suitable climate conditions. Thus, localized extirpations over portions of the beardless chinchweed's range in lower elevations could result, and the occupied range in higher elevations may expand, depending upon habitat availability.

Erosion, Sedimentation, and Burial

General road maintenance and widening could disturb populations along road cuts and create erosion (Phillips *et al.* 1982, p. 8). Of the six extant U.S. populations, three occur along road cuts; another contains some plants that occur along a maintained trail. These plants could be damaged or removed by road or trail maintenance. Impacts from such stressors could be profound for the two populations adjacent to roads with fewer than 50 individuals. In addition, nonnative plant introduction and spread often occur in areas of disturbance, such as along roadways, along trails, in mining sites, and in areas of recreational use (Gelbard and Belnap 2003, p. 421; Brooks 2007, pp. 153–154; Anderson *et al*. 2015, p. 1).

The McCleary Canyon-Gunsight Pass population is in the path of a proposed alignment of a secondary access road for the proposed Rosemont Mine (Westland 2010, p. iv), and the McCleary Canyon-Wasp Canyon population is within the processing facility portion of the proposed Rosemont Mine (Westland 2017, entire). Collectively, these plants represent approximately 33 percent of the total beardless chinchweed populations known across the U.S. range and 16 percent of all known individuals. The proposed road alignment would eliminate these populations.

Dust from mining operations or recreational travel can impact beardless chinchweed populations along dirt roadways. Dust may negatively affect plant growth and vigor because of changes in physiological and biochemical processes and reduced pollination (Phillips *et al.* 1982, pp. 9–10; Chibuike and Obiora 2014, p. 1; Waser *et al.* 2017, p. 90). These impacts could affect those populations within 30 m (98 ft) of roads and mine sites (Waser *et al.* 2017, p. 90). This stressor could impact four of the six populations in the United States.

Fire primarily alters hydrology and erosion processes by consumption of the protective canopy, ground cover, and organic matter. When plants and litter are removed by fire, ground surface protection is decreased, less rainfall is intercepted, and less infiltration occurs (Pierson et al. 2011, p. 443). The exposed bare soil becomes susceptible to increased runoff generation and sediment detachment and transport (Pierson et al. 2011, p. 444). Amplified runoff postfire carries sediment (Pierson et al. 2011, p. 443), causing erosion or burial of beardless chinchweed plants.

In addition, mortality may be caused by direct trampling by livestock (Searle and Meyer 2020, p. 6) and mobilization of soils by the hard edges of hooves may lead to increased erosion or burial of nearby plants affecting beardless chinchweed individuals in areas with livestock grazing pressure.

Grazing

There are two different perspectives on the influence of grazing on the beardless

chinchweed:

(1) Wildfire historically maintained native open habitat where the beardless chinchweed occurred, but with fire suppression, overgrazing may have alternatively provided native open habitats for this species to expand its range in the early 1900s, even without frequent fire (Schmalzel 2015, pers. comm.), due to open space being created and maintained by cattle; or

(2) Grazing pressure may have contributed to the species' rareness (Keil 1982, entire) due to reduced reproduction and alteration in habitat.

Regardless, grazing that occurs in small populations (fewer than 50 individuals) of beardless chinchweed would have a negative population-level impact through the reduction of flowers and seeds, and possibly individuals. Beardless chinchweed does not flower until it reaches a height of more than 0.5 m (1.6 ft) tall, indicating that grazing in summer or fall when the plant is growing and flowering could reduce seed production and recruitment. Approximately 75 percent of individuals studied in a population at Coronado National Memorial showed signs of deer browse (Souther 2019, pers. comm.). The effect on plant reproduction was variable, with browsing appearing at times to stimulate floral production (early season) and at other times appearing to inhibit it (immediately prior to seed set).

Small Populations

Small population size affects beardless chinchweed population resiliency, as all stressors are exacerbated in populations with only a small number of individuals (fewer than 50). Small populations are less able to recover from losses caused by random environmental changes (Shaffer and Stein 2000, pp. 308–310), such as fluctuations in reproduction (demographic stochasticity), variations in rainfall (environmental stochasticity), or changes in the frequency or severity of disturbances, such as wildfires. Five of the six extant beardless chinchweed populations in the United States contain fewer than 50 individuals. We expect that the six populations in Mexico are of similar size but may be in worse condition, because of limited native habitat management, similar climate change impacts, equally frequent wildfires, and likely

more impacts from grazing. Losses due to mining, erosion, road and trail maintenance, trampling, grazing, or other stressors mentioned above are exacerbated in small populations and have the potential to seriously damage or completely remove these small populations. Synergistic interactions among wildfire, nonnative grasses, decreased precipitation, and increased temperatures cumulatively and cyclically impact the beardless chinchweed, and all stressors are exacerbated in small populations.

Current Condition of Beardless Chinchweed

Since 1962, we are aware of nine extirpated populations and one extirpated subpopulation of the beardless chinchweed in the United States. Currently, six extant beardless chinchweed populations occur across four mountain ranges in southern Arizona: the Atascosa-Pajarito, Huachuca, and Santa Rita Mountains and the Canelo Hills. These six populations consist of 992 individuals spread across less than 2 hectares (ha) (5 acres (ac)). Additionally, six populations have been reported from northern Mexico, but this information is from 1940 or earlier. In addition, we are aware of preliminary results of the fall 2020 survey efforts of the Coronado National Forest and the NPS including the discovery of as many as 225 additional individuals near and within known populations in the Coronado National Memorial and Coronado National Forest. Prior to the discovery, the Coronado National Memorial population was the largest known with 846 beardless chinchweed individuals. The increased abundance and potential increased distribution improves the resiliency of the Coronado National Memorial population, but does not change the overall determination for the species. We will continue to incorporate the best scientific information from these and future survey efforts in revisions of the SSA and Service decisions.

Population Resiliency of Beardless Chinchweed

To determine current condition, we assessed each population in terms of its resiliency. Our analysis of the past, current, and future stressors on the resources that the beardless chinchweed needs for long-term viability revealed that there are a number of stressors

influencing this species. All beardless chinchweed populations likely contain nonnative grasses with a competitive advantage over native grasses during periods of drought. Further, altered fire regime has the potential to affect all populations. This altered fire regime enhances the spread of nonnatives, and all populations of beardless chinchweed contain nonnatives. Consequently, fire will aid in the spread of nonnatives, is currently a risk to all populations of the beardless chinchweed, and will be further exacerbated by nonnative grasses in the near future (approximately 10 years). Altered precipitation, increased temperatures, increased evapotranspiration, decreased soil moisture, and decreased winter and spring precipitation are current and ongoing environmental conditions impacting all populations of the beardless chinchweed and exacerbating an altered fire regime.

Road maintenance is likely resulting in the loss of individuals in three populations (Ruby Road, Scotia Canyon, and Coronado National Memorial). In addition, all individuals in these three populations are currently being impacted by dust from the road. The Ruby Road and Scotia Canyon populations exhibit low resiliency, and the Coronado National Memorial population exhibits moderate resiliency. Two additional populations (McCleary Canyon-Gunsight Pass and McCleary Canyon-Wasp Canyon) will be impacted by Rosemont mining operations and dust in the near future (approximately 10 years; Westland 2010, p. iv). One of these populations currently exhibits low resiliency, and the other exhibits moderate resiliency. Rangewide (including Mexico), 11 of the 12 populations (83 percent) are small (fewer than 50 individuals). Synergistic interactions among wildfire, nonnative grasses, decreased precipitation, and increased temperatures cumulatively and cyclically impact the beardless chinchweed, and all stressors are exacerbated in small populations. Of the six extant populations in the United States, two exhibit moderate resiliency and four exhibit low resiliency (see table 1, below). A population with moderate resilience is one in which abundance ranges from 100–300 individuals the population contains 2 subpopulations, and spatial distribution is limited with few groupings; seed production is moderate; recruitment and mortality are equal such that the population does

not grow; the ability to withstand stochastic events or recover from stochastic events is limited due to low abundance and recruitment and to a reduced seed bank; and there is some suitable habitat. A population with low resilience is one in which abundance is less than 100 individuals, the population contains a single subpopulation, and spatial distribution is limited; seed production is low; mortality exceeds recruitment such that the population is declining; the ability to withstand stochastic events or recover from stochastic events is unlikely due to low abundance and recruitment and to a limited seed bank; and there is limited suitable habitat. The categories of conditions used to determine population resiliency are further described in the SSA report (Service 2020, Table 5.10) and the proposed listing rule (84 FR 67060, December 6, 2019, p. 84 FR 67065).

Table 1. Beardless chinchweed current population condition.

Mountain Range / Country	Population	Subpopulation	Number of Individuals	Current Condition
Atascosa-Pajarito Mountains, USA	Pena Blanca Lake	-	0	Extirpated
	Ruby Road	-	10	Low
	Summit Motorway	-	0	Extirpated
Canelo Hills, USA	Audubon Research Ranch	Post Canyon	0	Low
		Tributary of O'Donnell Canyon	37	
	Copper Mountain	-	0	Extirpated
	Harshaw Creek	-	0	Extirpated
	Lampshire Well	-	0	Extirpated
Huachuca Mountains, USA	Scotia Canyon	-	40	Low
	Coronado National Memorial	Visitor Center	785	Moderate
		State of Texas Mine	61	
	Joe's Canyon Trail	-	0	Extirpated
Patagonia Mountains, USA	Flux Canyon	-	0	Extirpated
	Washington Camp	-	0	Extirpated
Santa Rita Mountains, USA	Box Canyon	-	0	Extirpated
	McCleary Canyon-Gunsight Pass	-	32	Moderate
	McCleary Canyon-Wasp Canyon	-	32	Low
Chihuahua, Mexico	Batopililas, Rio Mayo	-	~10	Low

	Guasaremos, Rio Mayo	-	~10	Low
Sonora, Mexico	Canon de la Petaquilla	-	~10	Low
	North of Horconcitos	-	~10	Low
	Canyon Estrella, Sierra de los Cendros; southeast of Tesopaco	-	~10	Low
	Los Conejos, Rio Mayo	-	~10	Low

Beardless Chinchweed Representation

No genetic studies have been conducted within or among the 21 historical populations of the beardless chinchweed in southern Arizona and Mexico. Mountain ranges that have only one or two populations, or have only have one subpopulation per population, or low numbers of individuals per population with several miles between mountain ranges, may not be as genetically diverse because pollination or transport of seeds between populations may be very limited or nonexistent. Five of the six extant U.S. populations do not have multiple subpopulations. The Coronado National Memorial population has two subpopulations. The six extant U.S. populations are separated geographically into four ranges separated by 16 to 61 km (9.9 to 37.9 mi). There is likely genetic diversity among mountain ranges, but reduced genetic diversity within populations. Further, overall genetic diversity is likely reduced given that some populations are extirpated.

Extant U.S. populations of the beardless chinchweed range in elevation from 1,158 m (3,799 ft) to 1,737 m (5,699 ft). Of the 15 historical U.S. populations, 8 (approximately 53 percent) fall below 1,457 m (1,500 ft) elevation. Of these eight, six have been extirpated in recent decades. This loss of lower elevation populations may mean the loss of some local adaptation to warmer or drier environments and genetic differentiation among populations.

In the Ruby Road, Scotia Canyon, and Coronado National Memorial populations, and the Tributary of O'Donnell subpopulations, plants have been reported over many decades, indicating

that these populations may have the genetic and environmental diversity needed to adapt to changing conditions. However, both the Ruby Road and Scotia Canyon populations have been reduced in size in the past 30 years, and we have no previous count data at Coronado National Memorial for comparison.

Beardless Chinchweed Redundancy

The beardless chinchweed populations in the United States and Mexico are naturally fragmented between mountain ranges. Currently, six extant U.S. populations of the beardless chinchweed are spread across the Atascosa-Pajarito, Huachuca, and Santa Rita Mountains and the Canelo Hills. The Atascosa-Pajarito Mountains and the Canelo Hills have only one extant population each, while the Santa Rita and Huachuca Mountains have two extant populations each. Range separation makes natural gene exchange or re-establishment following extirpation very unlikely. In addition, six historical populations of the beardless chinchweed are distributed across two general areas in northern Chihuahua and Sonora, Mexico. Their status is unknown, but we expect they are small populations with poor habitat based on populations in the United States, which are small and dominated by nonnative species. Although this may imply some level of redundancy across the range of the beardless chinchweed, five of the six extant populations in the United States contain fewer than 50 individual plants. Further, nine populations and one subpopulation have been extirpated in recent decades, largely from the lower elevations of the species' range, and several populations have been reduced in size in recent decades.

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. Our assessment of the current and future conditions encompasses and incorporates the threats individually and cumulatively. Our current and future condition assessment is

iterative because it accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

Determination of Beardless Chinchweed's Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines "endangered species" as a species in danger of extinction throughout all or a significant portion of its range, and "threatened species" as a species likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of "endangered species" or "threatened species" because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

Historically, beardless chinchweed was known from 21 populations. Nine populations have been extirpated, leaving 12 extant populations (six in the United States and six in Mexico). The six populations in the United States consist of approximately 992 individuals spread across less than 2 ha (5 ac). Six populations have been reported from northern Mexico, but this information is from 1940 or earlier.

The proliferation of invasive, nonnative grasses throughout most of the beardless chinchweed's range has greatly affected this species through increased competition and altered fire regimes. Many of the historical locations no longer support the beardless chinchweed due to

this alteration of habitat (NPS 2014, pp. 3–4; Service 2014a, pp. 1–2; Service 2014c, entire; Service 2014c, pp. 1–2).

All beardless chinchweed populations likely contain nonnative grasses, resulting in habitat loss (Factor A). Further, an altered fire regime (Factors A and E) impacts all populations currently or in the near future and drives the spread of nonnatives (Factor A), exacerbating the encroachment of nonnative grasses. Consequently, all remaining populations of the beardless chinchweed are impacted by nonnative grasses now or will be in the near future. Altered precipitation (Factors A and E), increased temperatures (Factors A and E), and decreased annual precipitation (Factors A and E) are current and ongoing regional environmental conditions that are impacting all populations of the beardless chinchweed. These environmental conditions exacerbate an altered fire regime, driving the spread of nonnative grasses with competitive advantages over native grasses during periods of drought. Road and trail maintenance (Factors A and E) could damage or remove individuals in three populations with low resiliency (Ruby Road, Scotia Canyon, and Coronado National Memorial). In addition, all individuals in these three populations may be impacted by dust (Factor E) from the road. Two additional populations (McCleary Canyon-Gunsight Pass and McCleary Canyon-Wasp Canyon) will be impacted by roads (Factor A) related to mining operations in the near future (Westland 2010, p. iv). All individuals of these two populations will also be impacted by dust (Factor E). One of these populations is already of low resiliency and the other is of moderate resiliency. Eleven of 12 populations (92 percent) are small (fewer than 50 individuals). Synergistic interactions among wildfire, nonnative grasses, decreased precipitation, and increased temperatures cumulatively and cyclically impact the beardless chinchweed, and all stressors are exacerbated in small populations (Factor E). No conservation efforts have been implemented for this species.

We find beardless chinchweed to have poor representation in the form of potential genetic diversity (Factor E). All but one population has fewer than 50 individuals. Small populations are susceptible to the loss of genetic diversity, genetic drift, and inbreeding. There

are currently six populations spread across four mountain ranges in the United States and six populations in northern Mexico that are presumed extant. Five of the six extant U.S. populations do not have multiple subpopulations (the Coronado National Memorial population has two subpopulations). Mountain ranges that have only one or two populations, have only one subpopulation per population, or have low numbers of individuals per population with several miles between mountain ranges, may not be genetically diverse because pollination or transport of seeds between populations may be very limited. This could mean that between-population genetic diversity may be greater than within-population diversity (Smith and Wayne 1996, p. 333; Lindenmayer and Peakall 2000, p. 200). Further, there may have been a loss of genetic diversity in the nine extirpated populations.

Beardless chinchweed populations in the United States range in elevation from 1,158 m (3,799 ft) to 1,737 m (5,699 ft) in elevation. Of the 15 historical U.S. populations, 8 (approximately 53 percent) fall below 1,457 m (4,780 ft) elevation. Of these eight, six have been extirpated in recent decades. The loss of lower elevation populations may mean a loss of local adaptation to warmer or drier environments and genetic differentiation among populations (Factor E).

The beardless chinchweed needs to have multiple resilient populations distributed throughout its range to provide for redundancy. These multiple resilient populations should be spread over the range and distributed in such a way that a catastrophic event will not result in the loss of all populations. With the known extant populations separated by as much as 35 km (21.8 mi) in southern Arizona and even farther in northern Mexico, there is little connection potential between disjunct populations. Therefore, a localized stressor such as grazing during flowering would impact only those groups of plants near the activity. However, nonnative plant invasion, climatic changes, and repeated large-scale, moderate- and high-severity fires occur across the region and could impact all populations now or in the near future. The distance among

populations reduces connectivity, making it unlikely that another population naturally recolonizes a site after extirpation (Factor E).

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we find that the beardless chinchweed is presently in danger of extinction throughout its entire range based on the severity and immediacy of stressors currently impacting the species. The overall range has been significantly reduced (nine populations extirpated), and the remaining habitat and populations face a variety of factors acting in combination to reduce the overall viability of the species. The risk of extinction is high because the remaining populations are small, are isolated, and have limited potential for natural recolonization. We find that a threatened species status is not appropriate for the beardless chinchweed because of the species' current precarious condition due to its contracted range, because the stressors are severe and occurring rangewide, and because the stressors are ongoing and expected to continue into the future. Thus, after assessing the best available information, we determine that the beardless chinchweed is in danger of extinction throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. Because we have determined that beardless chinchweed is in danger of extinction throughout all of its range, we did not undertake an analysis of any significant portions of its range. Because the beardless chinchweed warrants listing as endangered throughout all of its range, our determination is consistent with the decision in *Center for Biological Diversity* v. *Everson*, 2020 WL 437289 (D.D.C. Jan. 28, 2020), in which the court vacated the aspect of our Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (79 FR 37578; July 1, 2014) that provided the Service and National

Marine Fisheries Service do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range.

Determination of Status

Our review of the best available scientific and commercial information indicates that the beardless chinchweed meets the definition of an endangered species. Therefore, we are listing the beardless chinchweed as an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies; private organizations; and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the stressors to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a

final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new stressors to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for downlisting (reclassification from endangered to threatened) or delisting (removal from listed status), and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (*http://www.fws.gov/endangered*), or from our Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration of native vegetation, research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Following publication of this final rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Arizona will be eligible for Federal funds to implement management actions that promote the protection or recovery of the beardless

chinchweed. Information on our grant programs that are available to aid species recovery can be found at *http://www.fws.gov/grants*.

Section 8(a) of the Act (16 U.S.C. 1537(a)) authorizes the provision of limited financial assistance for the development and management of programs that the Secretary of the Interior determines to be necessary or useful for the conservation of endangered or threatened species in foreign countries. Sections 8(b) and 8(c) of the Act (16 U.S.C. 1537(b) and (c)) authorize the Secretary to encourage conservation programs for foreign listed species, and to provide assistance for such programs, in the form of personnel and the training of personnel.

Please let us know if you are interested in participating in recovery efforts for the beardless chinchweed. Additionally, we invite you to submit any new information on this species whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by the USFS (Coronado National Forest), Bureau of Land Management, U.S. Customs and Border Protection, and NPS (Coronado National Memorial).

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered plants. The prohibitions of section 9(a)(2) of the Act, codified at 50 CFR 17.61, make it illegal for any person subject to the jurisdiction of the United States to: import or export; remove and reduce to possession from areas under Federal jurisdiction; maliciously damage or destroy on any such area; remove, cut, dig up, or damage or destroy on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law; deliver, receive, carry, transport, or ship in interstate or foreign commerce, by any means whatsoever and in the course of a commercial activity; or sell or offer for sale in interstate or foreign commerce an endangered plant. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered plants under certain circumstances. Regulations governing permits are codified at 50 CFR 17.62. With regard to endangered plants, a permit may be issued for scientific purposes or for enhancing the propagation or survival of the species. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of a listed species. Based on the best available information, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements; this list is not comprehensive:

(1) Normal nonnative, invasive species control practices, such as herbicide use, that are carried out in accordance with any existing regulations, permit and label requirements, and best management practices;

(2) Annual monitoring efforts; and

(3) Additional surveys to understand the extent of occupied habitat.

Based on the best available information, the following actions may potentially result in a violation of section 9 of the Act if they are not authorized in accordance with applicable law; this list is not comprehensive:

(1) Unauthorized damage or collection of beardless chinchweed from lands under Federal jurisdiction;

(2) Malicious destruction or degradation of the species or associated habitat on lands under Federal jurisdiction, including the intentional introduction of nonnative organisms that compete with or consume beardless chinchweed.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

II. Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the

species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore or recover the species; instead, they must implement "reasonable and prudent alternatives" to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act's definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the

conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat). In identifying those physical or biological features that occur in specific occupied areas, we focus on the specific features that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic, or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity.

Under the second prong of the Act's definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. When designating critical habitat, the Secretary will first evaluate areas occupied by the species. The Secretary will only consider unoccupied areas to be essential where a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species. In addition, for an unoccupied area to be considered essential, the Secretary must determine that there is a reasonable certainty both that the area will contribute to the conservation of the species and that the area contains one or more of those physical or biological features essential to the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal

Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines, provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in section 9 of the Act. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this species. Similarly, critical habitat designations made on the basis of the best available information at the time of

designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Physical or Biological Features

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define "physical or biological features essential to the conservation of the species" as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, the Service may consider an appropriate quality, quantity, and spatial and temporal arrangement of

habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

The beardless chinchweed needs multiple populations distributed across its range that are large enough to withstand stochastic events, and connectivity to reestablish extirpated populations. Species that are widely distributed are less susceptible to extinction and more likely to be viable than species confined to small ranges (Carroll *et al.* 2010, entire). Historically, there were 21 populations across seven mountain ranges. Nine populations (and one subpopulation) have been extirpated in the United States, and all populations are extirpated from the Patagonia Mountains in the United States. This leaves six populations across four mountain ranges covering an occupied area of about 2 ha (5 ac) in the United States and six small populations in Mexico. Further, two mountain ranges only have one population each with fewer than 50 individuals. In addition, one mountain range has only two populations, both with fewer than 50 individuals each. The current distribution of this species does not represent its historical geographical distribution. Additional populations are needed to increase the redundancy of the species to secure the species from catastrophic events like wildfire and nonnative grass encroachment. Increased representation in the form of ecological environments are needed to secure the species against environmental changes like increased temperatures, increased drought, and increased evapotranspiration. Specifically, populations at higher altitudes are likely needed to secure the species' viability.

All populations need protection from wildfires of high severity and of greater frequency than was known historically and from nonnative grass encroachment. Further, all populations need protection from stressors related to one or more of the following activities: recreation, road and trail maintenance, grazing, trampling, and mining. As discussed above, these stressors are

currently, or will in the near future, impact all populations. Protection is needed from these stressors to ensure the conservation of the species.

The minimum viable population size for this species is unknown. General conservation biology indicates that at least 500 individual are needed for a minimum viable population. Currently, 11 of the 12 populations have fewer than 50 individuals. In Arizona, there are currently approximately 992 individual beardless chinchweed plants spread across less than 2 ha (5 ac) within six extant populations spread across four mountain ranges. Space, in the form of habitat described above, is needed for an increase in the number of populations and the number of individuals per population.

Space for individual and population growth is needed for the beardless chinchweed, including sites for germination, pollination, reproduction, pollen and seed dispersal, and seed banks in the form of open, native-dominated plains, great basin, and semi-desert grasslands, oak savannas, and Madrean evergreen or oak woodlands at 1,158 to 1,737 m (3,799 to 5,699 ft) in elevation (SEINet, entire) representing the ecosystems where beardless chinchweed occurs. In addition, plants need space on steep, south-facing, sunny to partially shaded hillslopes, with eroding bedrock and open areas with little competition from other plants. Native-dominated habitats have diverse assemblages of vegetation, each with different-shaped and -sized canopy and root system, which creates heterogeneity of form, height, and patchiness and provides openness. The diverse vegetation is dominated by bunchgrasses with open spacing (adjacent to and within 10 m (33 ft) of beardless chinchweed plants), providing beardless chinchweed with the necessary open habitat with little competition. The beardless chinchweed is presumed to be a poor competitor due to its preference for this open habitat and the inability to find the species under dense vegetation conditions.

Pollination is necessary for effective fertilization, out-crossing, and seed production in beardless chinchweed. Bees, flies, and butterflies most likely pollinate beardless chinchweed, like other yellow-flowered composites. Many bees and butterflies can travel a distance of 1 km

(0.62 mi); consequently, adequate space for pollinators is needed around beardless chinchweed populations to support pollinators and, therefore, cross-pollination within and among populations and subpopulations. In addition, open space is needed in the form of seedbanks for population growth. Further, beardless chinchweed populations need space with soil moisture and nutrients for individual and population growth.

Specific details about the physical or biological features essential to this species are described earlier in this document and in the SSA report (Service 2020).

Summary of Essential Physical or Biological Features

We derived the specific physical or biological features essential to the conservation of the beardless chinchweed from studies of this species' habitat, ecology, and life history, as described below. We have determined that the following physical or biological features of the areas in Cochise, Pima, and Santa Cruz Counties, Arizona, are essential to the conservation of beardless chinchweed:

(1) Native-dominated plant communities, consisting of:

(a) Plains, great basin, and semi-desert grasslands, oak savanna, or Madrean evergreen woodland;

(b) Communities dominated by bunchgrasses with open spacing (adjacent to and within 10 m (33 ft) of individual beardless chinchweed) and with little competition from other plants; and

(c) Communities with plants for pollinator foraging and nesting within 1 km (0.62 mi) of beardless chinchweed populations.

(2) Between elevation of 1,158 to 1,737 m (3,799 to 5,699 ft) elevation.

(3) Eroding limestone or granite bedrock substrate.

(4) Steep, south-facing, sunny to partially shaded hillslopes.

(5) The presence of pollinators (i.e., flies, bees, and butterflies).

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of this species may require special management considerations or protection to reduce the following stressors: altered fire regime, nonnative grass encroachment, grazing, erosion, and burial (see table 2, below). Special management considerations or protection are required within critical habitat areas to address these stressors. Management activities that could ameliorate these stressors include (but are not limited to): prescribed fire, fire breaks, reduction of nonnative grasses, promotion or introduction of native forbs and grasses, cleaning of vegetation management equipment between uses, exclosure fences, and protection from erosion and burial. These management activities will protect the physical or biological features for the species by reducing or avoiding the encroachment or expansion of nonnative grass species, promoting native vegetation, and preventing the succession of vegetation so that open space and sun exposure are maintained in beardless chinchweed habitat.

Table 2. Features that may require special management.

Features that may require special management	Stressors to features	Special management or protection to address stressors	Features protected by
Native-dominated plant communities	Altered fire regime; nonnative grasses; grazing; road and trail maintenance	Fire breaks around populations; prescribed fires; reduction of nonnative grasses; clean equipment to limit the spread of nonnatives; promotion or introduction of native forbs and grasses	Avoidance of encroachment of nonnatives from wildfires and drought; promotion of native species through natural fire regime or other tools; avoidance of introducing nonnative species
Plants for pollinators	Altered fire regime; nonnative grasses	Fire breaks around populations; prescribed fires; reduction of nonnative grasses; promotion or introduction of native forbs and grasses	Avoidance of encroachment of nonnatives from wildfires and drought; promotion of native species through natural fire regime or other tools; avoidance of introducing nonnative species

Features that may require special management	Stressors to features	Special management or protection to address stressors	Features protected by
Open, sunny sites	Altered fire regime; nonnative grasses	Prescribed fires; reduction of nonnative grasses; promotion or introduction of native forbs and grasses	Elimination or reduction of the loss of open space and sun exposure

Criteria Used To Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat.

Because of the vulnerability associated with small populations, limited distributions, or both, conservation of the beardless chinchweed requires protection of both existing occupied habitat and potential habitat (i.e., suitable for occupancy but currently unoccupied), and the establishment of new populations to reduce or eliminate such vulnerability. The current distribution of beardless chinchweed is reduced from its historical distribution to a level where the species is in danger of extinction. Of the six U.S. populations that occur in four mountain ranges, two populations are in moderate condition and four are in low condition. Conservation of the species will require populations with increased resiliency, abundance, and distribution to increase the redundancy and representation of beardless chinchweed. Due to current stressors and expected future stressors, remaining populations are small, are isolated, and have limited potential for natural recolonization. We anticipate that recovery will require continued protection of existing populations and habitat, as well as reestablishment of populations at a subset of previously occupied habitats throughout the species' historical range in the United States. Reestablishment of additional populations will help to ensure that catastrophic events,

such as wildfire, cannot simultaneously affect all known populations (i.e., increased redundancy). For these reasons, we conclude that a critical habitat designation limited to areas occupied at the time of listing would be inadequate to ensure the conservation of the species.

We are designating critical habitat in areas within the geographical area currently occupied by the species (i.e., at the time of proposed listing). In this case, we determined that occupied areas are inadequate to ensure the conservation of the species. Thus, we looked at historically occupied areas that currently possess the physical and biological features to determine if any areas are suitable for beardless chinchweed recolonization and subsequent persistence. In addition to areas occupied by the species at the time of listing, we are designating specific areas outside the geographical area occupied by the species at the time of listing (Units 5, 6, and 7), which were historically occupied but are presently unoccupied, because those areas are essential for the conservation of the species and contain one or more of the physical or biological features essential to the conservation of the species. The Service is reasonably certain that the unoccupied areas will contribute to the conservation of the species as a result of ongoing conservation efforts for beardless chinchweed with USFS that are expected to continue, including habitat management and research. When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, other unpublished materials, or experts' opinions or personal knowledge. In this case, we used existing occurrence data for the beardless chinchweed and information on the habitat and ecosystems upon which it depends. These sources of information included, but were not limited to:

(1) Data used to prepare the rule to list the species;

(2) Information from biological surveys;

(3) Various agency reports and databases;

(4) Information from NPS and other cooperators;

(5) Information from species experts;

(6) Data and information presented in academic research theses; and

(7) Regional Geographic Information System (GIS) data (such as species occurrence data, land use, topography, aerial imagery, soil data, and land ownership maps) for area calculations and mapping.

Areas Occupied at the Time of Listing

In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we reviewed available information pertaining to the habitat requirements of the species, identified specific areas within the geographical area occupied by the species at the time of listing, and examined whether we could identify any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat.

The critical habitat designation does not include all populations known to have been occupied by the species historically; instead, it includes all currently occupied areas within the historical range that have retained the necessary physical or biological features that will allow for the maintenance and expansion of these existing populations. The following populations meet the definition of areas occupied by the species at the time of listing: McCleary Canyon (2 populations), Audubon Research Ranch, Scotia Canyon, Coronado National Memorial, and Ruby Road.

Areas Outside the Geographical Area Occupied at the Time of Listing

Because we determined that a critical habitat designation limited to geographical areas occupied by the species would be inadequate to ensure the conservation of the species, we are also designating unoccupied areas. Pena Blanca Lake, Summit Motorway, Copper Mountain, Lampshire Well, Harshaw Creek, Flux Canyon, Washington Camp, Box Canyon, and Joe's Canyon are within the historical range of the beardless chinchweed, but are not currently

occupied by the species. We determined these sites to be extirpated. Areas not occupied by the species at the time of listing are only considered to be essential if they contain one or more of the physical and biological features essential to the conservation of the species and if we have a reasonable certainty that the area will contribute to the conservation of the species. To determine if these areas are essential for the conservation of beardless chinchweed, we considered the life history, status, and conservation needs of the species such as: (1) The importance of the site to the overall status of the species to prevent extinction and contribute to future recovery of the beardless chinchweed; (2) whether the area could be restored to support the beardless chinchweed; (3) whether the site provides connectivity between occupied sites for genetic exchange; and (4) whether a population of the species could be reestablished in the area.

Of the unoccupied areas, Lampshire Well, Harshaw Creek, and Washington Camp on USFS lands contain a mixture of native and nonnative grasses that could be feasibly restored to native conditions, thus making them suitable for reestablishment of the species, and they are important to the overall status of the species. The reestablishment of the Washington Camp population would reintroduce the species into the Patagonia Mountains, where currently it is extirpated. The reestablishment of beardless chinchweed into the Patagonia Mountains would restore the historical range of the species in terms of occupied mountain ranges. This area would provide key representation and redundancy needed for conservation of the species. Further, the addition of two reestablished populations in the Canelo Hills would increase the redundancy of the species in this area and reduce the chance that a catastrophic event would eliminate all populations in this area. Currently, there is only one population with 37 individuals in the Canelo Hills.

Of the remaining historical populations in the United States, Pena Blanca Lake, Summit Motorway, Copper Mountain, Box Canyon, Joe's Canyon, and Flux Canyon are heavily infested with nonnative grasses to an extent where restoration of native vegetation is not likely feasible. Reestablishment of the species to these historical sites is not likely to be successful and,

therefore, not likely to contribute to the recovery of the species. Therefore, these remaining historical sites are not included in the designation of critical habitat.

In summary, for areas within the geographic area occupied by the species at the time of listing (i.e., currently occupied), we delineated critical habitat unit boundaries by evaluating the habitat suitability of areas within the geographic area occupied at the time of listing, and retaining those units that contain some or all of the physical or biological features to support life-history functions essential for conservation of the species.

For areas outside the geographic area occupied by the species at the time of listing, we delineated critical habitat unit boundaries by evaluating areas not known to have been occupied at listing (i.e., that are not currently occupied) but that are within the historical range of the species to determine if they are essential to the survival and recovery of the species. Essential areas are those that: (1) serve to extend an occupied unit; and (2) expand the geographic distribution within areas not occupied at the time of listing across the historical range of the species.

We conclude that the areas we are designating as critical habitat provide for the conservation of the beardless chinchweed because they include habitat for all extant populations and include habitat for connectivity and dispersal opportunities within units. Such opportunities for dispersal assist in maintaining the population structure and distribution of the species. In addition, the unoccupied units each contain one or more of the physical or biological features and are likely to provide for the conservation of the species. Each of the unoccupied areas are on lands managed by the Coronado National Forest. The Forest Plan for the Coronado National Forest contains several important guidelines that will contribute to the conservation of the beardless chinchweed, including control of nonnative vegetation, promotion of native grasses, and protections for species listed under the Act (USFS 2018). Designation of critical habitat will facilitate the application of this guidance where it will do the most good for the beardless chinchweed.

As a final step, we evaluated occupied units and refined the area by evaluating the presence or absence of appropriate physical or biological features. We selected the boundary of a unit to include 1 km (0.62 mi) of foraging and reproductive habitat for pollinators necessary for the beardless chinchweed. We then mapped critical habitat units using ArcMap version 10 (Environmental Systems Research Institute, Inc.), a GIS program.

The areas included in the critical habitat designation provide sufficient habitat for recruitment, pollinators, seed bank, and seed dispersal. In general, the physical or biological features of critical habitat are contained within 1 km (0.62 mi) of beardless chinchweed plants within the population.

When determining critical habitat boundaries within this final rule, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack the physical or biological features necessary for the beardless chinchweed. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action would affect the physical or biological features in the adjacent critical habitat.

We are designating critical habitat in areas within the geographical area occupied by the species at the time of listing (i.e., currently occupied) and that contain one or more of the physical or biological features that are essential to support the life-history processes of the species. Because of the species' vulnerabilities related to small, isolated populations, current and ongoing stressors, and limited distribution, we have determined that occupied areas are inadequate to ensure the conservation of the species. We are also designating specific areas outside the geographical area occupied by the species at the time of listing, that were historically

occupied but are presently unoccupied, because we have determined that such areas are essential for the conservation of the species.

On December 16, 2020, we published a final rule in the Federal Register (85 FR 81411) adding a definition of "habitat" to our regulations for purposes of critical habitat designations under the Endangered Species Act of 1973, as amended (Act). This rule became effective on January 15, 2021 and only applies to critical habitat rules for which a proposed rule was published after January 15, 2021. Consequently, this new regulation does not apply to this final rule.

Units are designated based on one or more of the physical or biological features being present to support the beardless chinchweed's life-history processes. Some units contain all of the identified physical or biological features and support multiple life-history processes. Some units contain only some of the physical or biological features necessary to support the beardless chinchweed's particular use of that habitat.

The critical habitat designation is defined by the map, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which the map is based available to the public on *http://www.regulations.gov* at Docket No. FWS–R2–ES–2018–0104, on our Internet site at *https://www.fws.gov/southwest/es/arizona/Docs_Species.htm,* and at the field office responsible for the designation (see **FOR FURTHER INFORMATION CONTACT**).

Final Critical Habitat Designation

We are designating approximately 10,604 ac (4,291 ha) in eight units as critical habitat for the beardless chinchweed. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the beardless chinchweed. Those eight units are: (1) McCleary Canyon, (2) Audubon Research Ranch, (3) Scotia Canyon,

(4) Coronado National Memorial, (5) Lampshire Well, (6) Harshaw Creek, (7) Washington Camp, and (8) Ruby Road. Table 3 shows the name, occupancy of the unit, land ownership, and approximate area of the designated critical habitat for the beardless chinchweed.

Table 3. Critical habitat units and occupancy of beardless chinchweed.

Critical Habitat Unit	Occupied at the Time of Listing	Ownership	Size of Unit in Acres (Hectares)
1 – McCleary Canyon	Yes	U.S. Forest Service (USFS)	1,686 ac (682 ha)
2 – Audubon Research Ranch	Yes	Bureau of Land Management (BLM), USFS, Private (Audubon Research Ranch)	1,170 ac (474 ha) BLM; 817 ac (331 ha) USFS; 300 ac (121 ha) private
3 – Scotia Canyon	Yes	USFS	855 ac (346 ha)
4 – Coronado National Memorial	Yes	National Park Service	2,109 ac (853 ha)
5 – Lampshire Well	No	USFS	939 ac (380 ha)
6 – Harshaw Creek	No	USFS	1,013 ac (410 ha)
7 – Washington Camp	No	USFS	939 ac (380 ha)
8 – Ruby Road	Yes	USFS	776 ac (314 ha)
TOTAL:			10,604 ac (4,291 ha)

Note: Area sizes may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the beardless chinchweed, below. Each of the eight units contain at least one of the physical or biological features essential to the conservation of beardless chinchweed (see *Summary of Essential Physical or Biological Features*, above).

Unit 1: McCleary Canyon

The McCleary Canyon unit occurs in the northeastern portion of the Santa Rita Mountains in Pima County, Arizona, and is managed by the USFS. This unit is 1,686 ac (682 ha) in size and is currently occupied. The unit contains two extant populations: Gunsight Pass and Wasp Canyon. Each population within the McCleary Canyon unit supports 32 individual beardless chinchweed plants. The proposed Rosemont Copper Mine occurs in this unit, and ongoing and historical mining activities occur throughout the Santa Rita Mountains. This unit

also receives substantial recreational pressure and livestock grazing. The Gunsight Pass population is one of the few populations within the range of the beardless chinchweed where native grass species dominate the site. The Wasp Canyon population has a mixture of native and nonnative grass species. The McCleary Canyon unit provides all five of the physical or biological features essential to the conservation of the beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence, promotion of native forbs and grasses, removal of livestock between April and October, and the creation of exclosures. This unit includes habitat for species already listed under the Act, including the jaguar (*Panthera onca*), ocelot (*Leopardus (=Felis) pardalis)*, Mexican spotted owl (*Strix occidentalis lucida*), yellow-billed cuckoo (*Coccyzus americanus*), and Chiricahua leopard frog (*Lithobates chiricahuensis*, listed as *Rana chiricahuensis*). This unit overlaps with designated critical habitat for the jaguar.

Unit 2: Audubon Research Ranch

The Audubon Research Ranch unit occurs in the northern portion of the Canelo Hills in Santa Cruz County, Arizona, and is managed by the Audubon Society, and some plants occur on the Coronado National Forest. This unit is 2,287 ac (926 ha) in size and is currently occupied. The O'Donnell Canyon population is currently extant but there was one additional population, Post Canyon, that occurred here historically. The Audubon Research Ranch unit supports 37 individual beardless chinchweed plants and is one of the few sites within the range of the beardless chinchweed where native grass species dominate the site. The Audubon Research Ranch unit provides all five of the physical or biological features essential to the conservation of the beardless chinchweed. Features in this unit may require special management considerations, including reduction in nonnative grass presence and promotion of native forbs and grasses. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, Gila chub (*Gila intermedia*), northern Mexican gartersnake (*Thamnophis eques megalops*), and Huachuca water-umbel (*Lilaeopsis*

schaffneriana var. *recurva*). In addition, this unit includes designated critical habitat for Chiricahua leopard frog, Gila chub, and Huachuca water-umbel, and proposed critical habitat for northern Mexican gartersnake.

Unit 3: Scotia Canyon

The Scotia Canyon unit occurs on the western slopes of the Huachuca Mountains in Cochise County, Arizona, and is managed by the USFS. This unit is 855 ac (346 ha) in size and is currently occupied by beardless chinchweed. This unit includes one extant population estimated to contain 40 individual beardless chinchweed plants. This unit has been impacted by historical mining, grazing, and wildfire. High recreational use also occurs in this unit. The Scotia Canyon unit is one of the few sites within the range of beardless chinchweed where native grass species dominate the site. The Scotia Canyon unit provides all five of the physical or biological features essential to the conservation of the beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence, promotion of native forbs and grasses, reduction in road maintenance activity, removal of livestock between April and October, and the creation of exclosures. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, and Huachuca water-umbel. In addition, this unit includes designated critical habitat for jaguar and Huachuca water-umbel, and proposed critical habitat for northern Mexican gartersnake.

Unit 4: Coronado National Memorial

The Coronado National Memorial unit occurs in the southern portion of the Huachuca Mountains in Cochise County, Arizona, and is managed by the NPS. This unit is 2,109 ac (853 ha) in size and is occupied by beardless chinchweed. The unit contains two extant subpopulations: the Visitor Center and the State of Texas Mine. The area around the visitor center supports approximately 785 individual beardless chinchweed plants. Another 61 plants

have been documented in the vicinity of the State of Texas mine. This unit includes lands within the 1 km buffer of foraging and reproductive habitat for pollinators necessary for the beardless chinchweed where the historical subpopulation, Joe's Canyon Trail, occurred. As described in the response to public comments, beardless chinchweed may have been noted at Joe's Canyon Trail in 2012; however, three surveys since 2014 have not detected the species. The lands in this unit have been affected by historical mining, support a high level of recreational use, and experience ongoing impacts from wildfire. Portions of the Coronado National Memorial unit are dominated by native grass species, while other areas are a mixture of native and nonnative grasses. The Coronado National Memorial unit provides all five of the physical or biological features essential to the conservation of beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence and promotion of native forbs and grasses. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, and Huachuca water-umbel. In addition, this unit includes designated critical habitat for jaguar and Mexican spotted owl.

Unit 5: Lampshire Well

The Lampshire Well unit occurs in the Canelo Hills in Santa Cruz County, Arizona, and is managed by the USFS. This unit is 939 ac (380 ha) in size and is currently unoccupied. Historically, beardless chinchweed populations occurred on this unit. This unit is characterized by communities of mixed native and nonnative grasses, and is subject to impacts from cross-border activities (foot traffic and increased fire ignition) and wildfire. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, Huachuca water-umbel, and Canelo Hills ladies'-tresses (*Spiranthes delitescens*). In addition, this unit includes designated critical habitat for jaguar and proposed critical habitat for northern Mexican gartersnake.

Although it is currently unoccupied, this unit contains all five of the physical or biological features essential to the conservation of beardless chinchweed. This unit consists of a mix of native and nonnative grasses, with scattered oak and juniper, at an elevation of 1,646 m (5,400 ft), on granitic substrate with steep slopes facing the southwest. There are areas in this unit that contain more native grasses than nonnative grasses. The USFS is committed to managing for the recovery of listed species; reducing nonnative, invasive species; and managing fuel loads to reduce potential for high-intensity wildfire (USDA FS 2018, pp. 18, 67, 212, 216). The Lampshire Well unit is essential to the conservation of the species because it provides for habitat and population restoration opportunities, as well as provides habitat connectivity for beardless chinchweed and its pollinators. Recovery of this species will require new and expanded populations, and this unit provides necessary habitat that will contribute to the species' resiliency (larger and more populations), redundancy (more populations across the range), and representation (opportunities for increased genetic and environmental variation). We have determined that this unoccupied unit contains all five of the physical or biological features that are essential to the conservation of the species and that it is reasonably certain that it will contribute to the conservation of the species.

Unit 6: Harshaw Creek

The Harshaw Creek unit occurs in the Canelo Hills in Santa Cruz County, Arizona, and is managed by the U.S. Forest Service. This unit is 1,013 ac (410 ha) in size and is currently unoccupied. Historically, beardless chinchweed populations occurred on this unit. This unit is characterized by communities of mixed native and nonnative grasses, and is subject to cross-border activities (foot traffic and increased fire ignition) and wildfire. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, northern Mexican gartersnake, Huachuca water-umbel, and Canelo Hills ladies'-tresses. In addition, this unit includes designated critical habitat for jaguar and proposed critical habitat for northern Mexican gartersnake.

Although it is currently unoccupied, portions of this unit contain all five of the physical or biological features essential for the conservation of beardless chinchweed. This unit consists of a mix of native and nonnative grasses, with scattered oak and junipers, at an elevation of 1,494 m (4,900 ft), on granitic, rocky substrate with steep slopes facing the southwest. There are areas in this unit with more native grasses than nonnative grasses. The U.S. Forest Service is committed to managing for the recovery of listed species; reducing nonnative, invasive species; and managing fuel loads to reduce potential for high-intensity wildfire (USDA Forest Service 2018, pp. 18, 67, 212, 216). The Harshaw Creek unit is essential to the conservation of the species because it provides for habitat and population restoration opportunities, as well as provides habitat connectivity for beardless chinchweed and its pollinators. Recovery of this species will require new and expanded populations, and this unit provides for this needed habitat that will contribute to the species' resiliency (larger and more populations), redundancy (more populations across the range), and representation (opportunities for increased genetic and environmental variation). We have determined that this unoccupied unit contains all five of the physical or biological features that are essential to the conservation of the species and that it is reasonably certain to contribute to the conservation of the species.

Unit 7: Washington Camp

The Washington Camp unit occurs in the northeastern portion of the Patagonia Mountains in Santa Cruz County, Arizona, and is managed by the U.S. Forest Service. This unit is 939 ac (380 ha) in size and is currently unoccupied. A number of mining activities are proposed on lands within this unit, and this unit is also subject to cross-border activities (foot traffic and increased fire ignition), recreational use, and wildfire. This unit is characterized by a mixture of native and nonnative grass species. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, and northern Mexican gartersnake. In addition, this unit includes designated

critical habitat for jaguar and Mexican spotted owl, and proposed critical habitat for northern Mexican gartersnake.

Although it is currently unoccupied, portions of this unit contain all five of the physical or biological features essential for the conservation of beardless chinchweed. This unit consists of a mix of native and nonnative grasses, with scattered oak and juniper at an elevation of 1,646 m (5,400 ft), on granitic substrate with steep slopes facing the southwest. There are areas in this unit that contain more native grasses than nonnative grasses. The U.S. Forest Service is committed to managing for the recovery of listed species; reducing nonnative, invasive species; and managing fuel loads to reduce potential for high-intensity wildfire (USDA Forest Service 2018, pp. 18, 67, 212, 216). The Washington Camp unit is essential to the conservation of the species because it provides for habitat and population restoration opportunities, as well as provides habitat connectivity for beardless chinchweed and its pollinators. Recovery of this species will require new and expanded populations, and this unit provides for this needed habitat that will contribute to the species' resiliency (larger and more populations), redundancy (more populations across the range), and representation (opportunities for increased genetic and environmental variation). We have determined that this unoccupied unit contains one or more of the physical or biological features that are essential to the conservation of the species and that it is reasonably certain that it will contribute to the conservation of the species.

Unit 8: Ruby Road

The Ruby Road unit occurs in the Atascosa-Pajarito Mountains in Santa Cruz County, Arizona, and is managed by the U.S. Forest Service. This unit is 776 ac (314 ha) in size and is currently occupied. There is one extant population, Ruby Road, within this unit that supports approximately 10 individual beardless chinchweed plants. Despite the fact that nonnative grasses dominate this unit, beardless chinchweed is able to overcome this competition by occurring in areas along a roadside that is regularly maintained, which removes much of the nonnative grass cover. This unit has been affected by past mining activities, and is subject to

ongoing cross-border activities (foot traffic and increased fire ignition), recreational use, grazing, and wildfire. The Ruby Road unit currently provides four of the physical or biological features essential to the conservation of beardless chinchweed. The physical and biological features in this unit may require special management considerations, including reduction in nonnative grass presence, promotion of native forbs and grasses, reduction in road maintenance activity, removal of livestock between April and October, and creation of exclosures. This unit includes habitat for species already listed under the Act: jaguar, ocelot, Mexican spotted owl, yellow-billed cuckoo, Chiricahua leopard frog, and northern Mexican gartersnake. In addition, this unit includes designated critical habitat for jaguar, Mexican spotted owl, and Chiricahua leopard frog.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. In addition, section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under the Act or result in the destruction or adverse modification of proposed critical habitat.

We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers

under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq*.) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency, do not require section 7 consultation.

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define "reasonable and prudent alternatives" (at 50 CFR 402.02) as alternative actions identified during consultation that:

(1) Can be implemented in a manner consistent with the intended purpose of the action,

(2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,

(3) Are economically and technologically feasible, and

(4) Would, in the Service Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation, we have listed a new species or designated critical habitat that may be affected by the Federal action, or the action has been modified in a manner that affects the species or critical habitat in a way not considered in the previous consultation. In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but the regulations also specify some exceptions to the requirement to reinitiate consultation on specific land management plans after subsequently listing a new species or designating new critical habitat. See the regulations for a description of those exceptions.

Application of the "Adverse Modification" Standard

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final rule that designates critical habitat, activities involving a Federal action that may violate 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation.

Activities that the Services may, during a consultation under section 7(a)(2) of the Act, find are likely to destroy or adversely modify critical habitat include, but are not limited to:

(1) Actions that would remove native bunchgrass communities. Such activities could include, but are not limited to, livestock grazing; fire management; trails construction and maintenance; infrastructure and road construction and maintenance; recreation management; minerals extraction and restoration; visitor use and management; and construction and maintenance of border roads, fences, barriers, and towers. These activities could eliminate or reduce open habitat necessary for growth, seed production, seedbank, and pollinators of beardless chinchweed.

(2) Actions that would result in the introduction, spread, or augmentation of nonnative grass species. Such activities could include, but are not limited to, livestock grazing; fire management; trails construction and maintenance; infrastructure and road construction and maintenance; recreation management; minerals extraction and restoration; visitor use and management; and construction and maintenance of border roads, fences, barriers, and towers. These activities could increase the amount of nonnative grasses or introduce nonnative grasses, which eliminate or reduce open habitat necessary for growth, seed production, seedbank, and pollinators of beardless chinchweed.

(3) Actions that would promote high-severity wildfires. Such activities could include, but are not limited to, recreation and encouraging the encroachment of nonnative grasses. These activities could eliminate or reduce open habitat necessary for growth, seed production, seedbank, and pollinators of beardless chinchweed.

Exemptions

Application of Section 4(a)(3) of the Act

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense, or designated for its use, that are subject to an integrated natural

resources management plan (INRMP) prepared under section 101 of the Sikes Act (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no Department of Defense lands with a completed INRMP within the final critical habitat designation.

Consideration of Impacts under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. On December 18, 2020, we published a final rule in the Federal Register (85 FR 82376) revising portions of our regulations pertaining to exclusions of critical habitat. These final regulations became effective on January 19, 2021 and apply to critical habitat rules for which a proposed rule was published after January 19, 2021. Consequently, these new regulations do not apply to this final rule.

We describe below the process that we undertook for taking into consideration each category of impacts and our analyses of the relevant impacts.

Consideration of Economic Impacts

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. To assess the probable economic impacts of a designation, we must first evaluate specific land uses or activities and projects that may occur in the area of the critical habitat. We then must evaluate the impacts that

a specific critical habitat designation may have on restricting or modifying specific land uses or activities for the benefit of the species and its habitat within the areas proposed. We then identify which conservation efforts may be the result of the species being listed under the Act versus those attributed solely to the designation of critical habitat for this particular species. The probable economic impact of a critical habitat designation is analyzed by comparing scenarios both "with critical habitat" and "without critical habitat."

The "without critical habitat" scenario represents the baseline for the analysis, which includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat (e.g., under the Federal listing as well as other Federal, State, and local regulations). The baseline, therefore, represents the costs of all efforts attributable to the listing of the species under the Act (i.e., conservation of the species and its habitat incurred regardless of whether critical habitat is designated). The "with critical habitat" scenario describes the incremental impacts associated specifically with the designation of critical habitat for the species. The incremental conservation efforts and associated impacts would not be expected without the designation of critical habitat for the species. In other words, the incremental costs are those attributable solely to the designation of critical habitat, above and beyond the baseline costs. These are the costs we use when evaluating the benefits of inclusion and exclusion of particular areas from the final designation of critical habitat when conducting a discretionary 4(b)(2) exclusion analysis.

For this particular designation, we developed an incremental effects memorandum (IEM) considering the probable incremental economic impacts that may result from the designation of critical habitat. The information contained in our IEM was then used to develop a screening analysis of the probable effects of the designation of critical habitat for the beardless chinchweed (Industrial Economics, Incorporated (IEc) 2018, entire). We began by conducting a screening analysis of the designation of critical habitat in order to focus our analysis on the key factors that are likely to result in incremental economic impacts. The purpose of the screening analysis is to

filter out particular geographic areas of critical habitat that are already subject to such protections and are, therefore, unlikely to incur incremental economic impacts. In particular, the screening analysis considers baseline costs (i.e., absent critical habitat designation) and includes probable economic impacts where land and water use may be subject to conservation plans, land management plans, best management practices, or regulations that protect the habitat area as a result of the Federal listing status of the species. Ultimately, the screening analysis allows us to focus our analysis on evaluating the specific areas or sectors that may incur probable incremental economic impacts as a result of the designation. If there are any unoccupied units in the critical habitat designation, the screening analysis assesses whether any additional management or conservation efforts may incur incremental economic impacts. This screening analysis, combined with the information contained in our IEM, is what we consider our economic analysis of the critical habitat designation for the beardless chinchweed and is summarized in the narrative below.

Executive Orders (E.O.) 12866 and 13563 direct Federal agencies to assess the costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consistent with the E.O. regulatory analysis requirements, our effects analysis under the Act may take into consideration impacts to both directly and indirectly affected entities, where practicable and reasonable. If sufficient data are available, we assess to the extent practicable the probable impacts to both directly and indirectly affected entities.

As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the designation of critical habitat for beardless chinchweed, first we identified, in the IEM dated August 30, 2018, probable incremental economic impacts associated with the following categories of activities: (1) Federal lands management (NPS, USFS, Bureau of Land Management); (2) grazing (USFS, Bureau of Land Management); (3) wild and prescribed fire (NPS, USFS, Bureau of Land

Management); (4) groundwater pumping (USFS); (5) mining (USFS); (6) fuels management (NPS, USFS, Bureau of Land Management); (7) transportation (road construction and maintenance; NPS, USFS); and (8) trampling and dust creation from recreation and border protection activities (U.S. Customs and Border Protection, USFS, NPS). We considered each industry or category individually. Additionally, we considered whether their activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, the designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where beardless chinchweed is present, Federal agencies would already be required to consult with the Service under section 7 of the Act on activities they conduct, fund, permit, or authorize that may affect the species. When this rule becomes effective (see **DATES**, above), consultations to avoid the destruction or adverse modification of beardless chinchweed critical habitat will be incorporated into the existing consultation process.

In our IEM, we clarified the distinction between the effects that would result from the species being listed and those attributable to the critical habitat designation (i.e., difference between the jeopardy and adverse modification standards) for beardless chinchweed. For species where the designation of critical habitat is finalized concurrently with the listing, like beardless chinchweed, it has been our experience that it is more difficult to discern which conservation efforts are attributable to the species being listed and those which will result solely from the designation of critical habitat. However, the following specific circumstances in this case help to inform our evaluation: (1) the essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm or harassment to constitute jeopardy to beardless chinchweed would also likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This

evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this designation of critical habitat.

The critical habitat designation for beardless chinchweed totals approximately 7,713 ac (3,121 ha, or 73 percent of the total critical habitat designation) of currently occupied habitat and 2,891 ac (1,170 ha, or 27 percent of the total critical habitat designation) of unoccupied habitat (see Table 3, above). Every unit of critical habitat for the beardless chinchweed overlaps with the ranges of a number of currently listed species and designated critical habitats. Therefore, the actual number of section 7 consultations is not expected to increase; however, the analysis within these consultations would expand to consider effects to critical habitat for the beardless chinchweed. Consequently, there would likely be a small increase in the time needed to complete the consultation to include the assessment of beardless chinchweed critical habitat units (IEc 2018, entire). Section 7 consultations involving third parties (State, Tribal, or private lands) are limited.

Based on the locations of the critical habitat units and the types of projects we typically evaluate for the Coronado National Forest and the Coronado National Memorial, we estimate that there would likely be 4 to 6 consultations annually that would include the beardless chinchweed. The entities that would incur incremental costs are Federal agencies, because 97 percent of critical habitat is on Federal land.

In the 7,713 ac (3,121 ha) of occupied critical habitat (Units 1, 2, 3, 4, and 8), any actions that may affect the species or its habitat would also affect designated critical habitat. Consequently, it is unlikely that any additional conservation efforts would be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of the beardless chinchweed. Therefore, only administrative costs are expected in these occupied units. While this additional analysis will require time and resources by the Federal action agency, the Service, and third parties, it is expected that, in most circumstances, these costs would predominantly be administrative in

nature and would not be significant (IEc 2018, entire). In unoccupied areas, any conservation efforts or associated probable impacts would be considered incremental effects attributed to the critical habitat designation. In units occupied by the chinchweed, we determine the additional administrative cost to address chinchweed critical habitat in the consultation is minor, costing approximately $5,100 per consultation (2017 dollars). For the critical habitat units that are currently occupied by beardless chinchweed (Units 1, 2, 3, 4, and 8), we have not identified any ongoing or future projects or actions that would warrant additional recommendations or modifications to avoid adversely modifying critical habitat above those that we would recommend for avoiding jeopardy. Therefore, project modifications resulting from section 7 consultations in occupied units are unlikely to be affected by the designation of critical habitat.

In unoccupied units (Units 5, 6, and 7), we determined the incremental administrative effort will be greater on a per consultation basis. Thus, we concluded an incremental per consultation administrative cost of $15,000 in unoccupied units (2017 dollars).

In unoccupied units, incremental project modifications are possible. No known projects are currently scheduled to occur within the designated areas; however, U.S. Forest Service staff express there is always a possibility of future projects related to grazing, transportation, mining, and recreation activities in this region. We discuss potential costs resulting from these activities below.

There are grazing allotments that overlap with unoccupied critical habitat. However, only one allotment overlaps with unoccupied critical habitat by more than 5 percent of the allotment's land area and two allotments with less than 5 percent of unoccupied critical habitat. In unoccupied units, our recommendations regarding alterations in amount or timing of grazing activities are not required because the species is not present. However, U.S. Forest Service may undertake range improvements to reduce the loss of native plant communities (e.g., bunchgrass) in the unoccupied critical habitat overlapping with grazing allotment units. The economic

analysis estimates that range improvement projects in a given year may cost the agency from $1,000 to $250,000.

During the improvement project, electric fencing (included in the U.S. Forest Service cost estimate) would be installed temporarily to exclude cattle. During this period, there could be a loss of forage, depending on the extent of overlap with existing grazing allotments, resulting in a temporary reduction in the number of animal unit months (AUMs; a measure of the amount of forage consumed by one cow and calf during one month) associated with the relevant allotment. The value of grazing permits associated with allotments on Federal land can be used to estimate the potential loss to ranchers during an exclusion period. We estimated a range of potential costs related to grazing, based on two scenarios. In the low-end scenario, we determined that AUM reductions would only occur in allotments where critical habitat accounts for greater than 5 percent of the total allotment area. Otherwise, ranchers are likely to be able to implement changes in practices that avoid the need to reduce the amount of cattle grazed on the allotment, and thus they avoid costs associated with lost AUMs. In the high-end scenario, we determined that ranchers are unable to change practices, and the loss in AUMs is proportional to the amount of overlap between designated critical habitat and the relevant allotment.

To identify the allotments overlapping unoccupied units and the number of AUMs permitted in each allotment, data were obtained from U.S. Forest Service. Those data were then used to calculate potential AUM reduction for each allotment unit overlapping with unoccupied critical habitat. Only one allotment (San Rafael) overlaps with unoccupied critical habitat by more than 5 percent of the allotment's land area. In this allotment, a temporary reduction of 402 AUMs is possible. For the remaining allotments, we determined no impact on permitted AUMs in the low-end scenario. In the high-end scenario, a temporary reduction of 747 AUMs is possible if all of the unoccupied units are fenced to exclude cattle during range improvement efforts.

The cost of reducing AUMs from occupied critical habitat during range improvement activities is unlikely to exceed $41,000 in the low-end scenario or $76,000 in the high-end scenario (2017 dollars). Impacts associated with reduced AUMs could be greatest in Unit 7 ($27,000), followed by Unit 6 ($25,000) and Unit 5 ($24,000). These estimates represent perpetuity values; thus, the single year loss would be a fraction of this amount.

Other activities that could overlap with unoccupied critical habitat include mining and road and trail construction. To avoid adverse effects to critical habitat, U.S. Forest Service might recommend moving these projects, if feasible, to avoid the critical habitat units. This could result in the need to construct additional linear miles of road. If projects can easily be moved to other areas, U.S. Forest Service estimates total, on-time costs to the agency, as well as the project proponents, in the range of $0 to $500,000. Where avoidance of critical habitat is prohibitively expensive, U.S. Forest Service states that it would instead recommend monitoring and subsequent treatment for the introduction or spread of invasive plants due to project activities. The costs to U.S. Forest Service and project proponents of these activities might range from $1,000 to $500,000. For projects that result in a significant amount of vegetation that would not regrow in a timely manner (approximately 2 years), U.S. Forest Service might require more all-inclusive restoration, reclamation, and revegetation of the disturbed project footprints. In these cases, costs to U.S. Forest Service and project proponents might range from $10,000 to $1,000,000.

The Service estimates a total of four to six consultations are likely to occur in a given year in designated areas. As a conservative estimate (i.e., more likely to overestimate than underestimate costs), we concluded that six consultations will occur and all of the consultations will be formal. The total administrative cost of these consultations is estimated to be $48,000 (IEc 2018, p. 16), including costs to the Service, the Federal action agency, and third parties. Incremental project modifications resulting solely from the designation of critical habitat are unlikely in occupied critical habitat. In unoccupied units, which are all managed by the U.S.

Forest Service, projects associated with grazing, mining, road or trail construction and maintenance, and range improvements are possible. The costs per project, including costs to the U.S. Forest Service and State, local, or private project proponents, might range from $0 (simply moving a project to avoid critical habitat where the overlap between the project and critical habitat is minor) to $1,000,000 (projects that result in a significant amount of surface disturbance, such as a new mining proposal in an unoccupied unit); however, it is very difficult to accurately predict these potential costs as often they are significantly reduced through the section 7 consultation process. When no more than six consultations, and therefore projects, are likely in a given year, the section 7 impacts of this critical habitat designation are unlikely to exceed $10 million in a given year (IEc 2018, p. 16). However, as stated above, no known projects are currently scheduled to occur within the designated unoccupied areas; thus, these estimated impacts are meant to capture a conservative high-end estimate of potential impacts. Therefore, our economic screening analysis indicates the incremental costs associated with critical habitat are unlikely to exceed $100 million in any single year, and, therefore, would not be significant.

Exclusions Based on Economic Impacts

We considered the economic impacts of the critical habitat designation and the Secretary is not exercising her discretion to exclude any areas from this designation of critical habitat for the beardless chinchweed based on economic impacts. A copy of the IEM and screening analysis with supporting documents may be obtained by contacting the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**) or by downloading from the Internet at *http://www.regulations.gov*.

Exclusions Based on Impacts on National Security and Homeland Security

Section 4(a)(3)(B)(i) of the Act may not cover all Department of Defense (DoD) lands or areas that pose potential national-security concerns (e.g., a DoD installation that is in the process of revising its INRMP for a newly listed species or a species previously not covered). If a

particular area is not covered under section 4(a)(3)(B)(i), national-security or homeland-security concerns are not a factor in the process of determining what areas meet the definition of "critical habitat." Nevertheless, when designating critical habitat under section 4(b)(2), the Service must consider impacts on national security, including homeland security, on lands or areas not covered by section 4(a)(3)(B)(i). Accordingly, we will always consider for exclusion from the designation areas for which DoD, Department of Homeland Security (DHS), or another Federal agency has requested exclusion based on an assertion of national-security or homeland-security concerns.

We cannot, however, automatically exclude requested areas. When DoD, DHS, or another Federal agency requests exclusion from critical habitat on the basis of national-security or homeland-security impacts, it must provide a reasonably specific justification of an incremental impact on national security that would result from the designation of that specific area as critical habitat. That justification could include demonstration of probable impacts, such as impacts to ongoing border-security patrols and surveillance activities, or a delay in training or facility construction, as a result of compliance with section 7(a)(2) of the Act. If the agency requesting the exclusion does not provide us with a reasonably specific justification, we will contact the agency to recommend that it provide a specific justification or clarification of its concerns relative to the probable incremental impact that could result from the designation. If the agency provides a reasonably specific justification, we will defer to the expert judgment of DoD, DHS, or another Federal agency as to: (1) Whether activities on its lands or waters, or its activities on other lands or waters, have national-security or homeland-security implications; (2) the importance of those implications; and (3) the degree to which the cited implications would be adversely affected in the absence of an exclusion. In that circumstance, in conducting a discretionary section 4(b)(2) exclusion analysis, we will give great weight to national-security and homeland-security concerns in analyzing the benefits of exclusion.

No lands within the designation of critical habitat for beardless chinchweed are owned or

managed by the DoD. The U.S. Customs and Border Protection (Department of Homeland Security) conducts border security operations and enforcement activities within and outside the 60-foot Roosevelt Reservation along the United States/Mexico border (Unit 4).

This rule takes into account any relevant national security impacts of the designation of critical habitat for the beardless chinchweed. We coordinated with the Customs and Border Protection (Department of Homeland Security) on the proposed and final designations of critical habitat. The agency did not request an exclusion from critical habitat based on potential national security impacts. We note that Congress has provided to the Secretary of Homeland Security a number of authorities necessary to carry out the Department's border security mission. One of those authorities is found at section 102 of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended (''IIRIRA''). In section 102(a) of IIRIRA, Congress provided that the Secretary of Homeland Security shall take such actions as may be necessary to install additional physical barriers and roads (including the removal of obstacles to detection of illegal entrants) in the vicinity of the United States border to deter illegal crossings in areas of high illegal entry into the United States. In section 102(b) of IIRIRA, Congress mandated the installation of additional fencing, barriers, roads, lighting, cameras, and sensors on the southwest border. Finally, in section 102(c) of IIRIRA, Congress granted to the Secretary of Homeland Security the authority to waive all legal requirements that he determines are necessary to ensure the expeditious construction of barriers and roads authorized by section 102 of IIRIRA. On May 15, 2019, the Secretary of Homeland Security issued waivers for legal requirements covering border barrier activities directly in the vicinity of the beardless chinchweed's known range and proposed critical habitat (85 FR 9794).

No impacts to national security or homeland security were presented to the Service, and we have no reason to expect such impacts from this designation of critical habitat. Consequently, the Secretary is not exercising her discretion to exclude any areas from the final

designation based on impacts on national security.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security. We consider a number of factors including whether there are permitted conservation plans covering the species in the area, such as habitat conservation plans, safe harbor agreements, or candidate conservation agreements with assurances, or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at the existence of Tribal conservation plans and partnerships and consider the government-to-government relationship of the United States with Tribal entities. We also consider any social impacts that might occur because of the designation.

In preparing this final rule, we have determined that there are currently no permitted conservation plans or other non-permitted conservation agreements or partnerships for the beardless chinchweed, and the final critical habitat designation does not include any Tribal lands or trust resources. We anticipate no impact on Tribal lands, partnerships, or permitted or non-permitted plans or agreements from this critical habitat designation. Accordingly, the Secretary is not exercising her discretion to exclude any areas from the final designation based on other relevant impacts.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs in the Office of Management and Budget (OMB) will review all significant rules. The Office of Information and Regulatory Affairs has determined that this rule is not significant.

Executive Order (E.O.) 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends.

The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq*.), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 *et seq.*), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than $5 million in annual sales, general and heavy construction businesses with less than $27.5 million in annual business, special trade contractors doing less than $11.5 million in annual business, and agricultural businesses with annual sales less than $750,000. To determine if potential economic impacts to these small

entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term "significant economic impact" is meant to apply to a typical small business firm's business operations.

Under the RFA, as amended, and as understood in the light of recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7, only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation. There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, the Service certifies that this critical habitat designation will not have a significant economic impact on a substantial number of small entities.

During the development of this final rule, we reviewed and evaluated all information submitted during the comment period on the December 6, 2019, proposed rule (84 FR 67060) that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this critical habitat designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. OMB has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute "a significant adverse effect" when compared to not taking the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis. Thus, based on information in the economic analysis, energy-related impacts associated with beardless chinchweed conservation activities within critical habitat are not expected. As such, the designation of critical habitat is not expected to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq*.), we make the following findings:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or tribal governments, or the private sector, and includes both "Federal intergovernmental mandates" and "Federal private sector mandates." These terms are defined in 2 U.S.C. 658(5)–(7). "Federal intergovernmental mandate" includes a regulation that "would impose an enforceable duty upon State, local, or tribal governments" with two exceptions. It excludes "a

condition of Federal assistance." It also excludes "a duty arising from participation in a voluntary Federal program," unless the regulation "relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority," if the provision would "increase the stringency of conditions of assistance" or "place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding," and the State, local, or tribal governments "lack authority" to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program."

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments because the area included in the critical habitat designation is largely owned by Federal agencies, with a small amount of private land (3 percent). Consequently, we do not believe that the critical habitat designation significantly or uniquely affects small government entities. Therefore, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for the beardless chinchweed in a takings implications assessment. The Act does not authorize the Service to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed and concludes that this designation of critical habitat for beardless chinchweed does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of the critical habitat designation with, the appropriate State resource agencies in Arizona. From a federalism perspective, the designation of critical habitat

directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the State, or on the relationship between the national government and the State, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat necessary to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist these local governments in long-range planning because these local governments no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) would be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this rule identifies the elements of physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on a map, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

It is our position that, outside the jurisdiction of the U.S. Court of Appeals for the Tenth Circuit, we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This position was upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes.

We determined that there are no Tribal lands occupied by the beardless chinchweed at the time of listing that contain the physical or biological features essential to the conservation of the

species, and no Tribal lands unoccupied by the beardless chinchweed that are essential to the conservation of the species. Therefore, we are not designating critical habitat for the beardless chinchweed on Tribal lands, and no Tribal lands are affected by the designation.

References Cited

A complete list of references cited in the SSA report and this rulemaking is available on the Internet at *http://www.regulations.gov* under Docket No. FWS–R2–ES–2018–0104 and upon request from the Arizona Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the U.S. Fish and Wildlife Service's Species Assessment Team and the Arizona Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Amend § 17.12(h), the List of Endangered and Threatened Plants, by adding an entry for "*Pectis imberbis*" in alphabetical order under FLOWERING PLANTS to read as set forth below:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
* * * * * * *				
Pectis imberbis	Beardless chinchweed	Wherever found	E	86 FR [INSERT *FEDERAL REGISTER* PAGE WHERE THE DOCUMENT BEGINS], [INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]; 50 CFR 17.96(a).[CH]
* * * * * * *				

3. Amend § 17.96(a) by adding an entry, in alphabetical order, for "Family Asteraceae: *Pectis imberbis* (beardless chinchweed)" to read as follows:

§ 17.96 Critical habitat—plants.

(a) *Flowering plants.*

* * * * *

Family Asteraceae: *Pectis imberbis* (beardless chinchweed)

(1) Critical habitat units are depicted for Cochise, Pima, and Santa Cruz Counties, Arizona, on the map in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of the beardless chinchweed consist of the following components:

(i) Native-dominated plant communities, consisting of:

(A) Plains, great basin, and semi-desert grasslands, oak savanna, or Madrean evergreen woodland;

(B) Communities dominated by bunchgrasses with open spacing (adjacent to and within 10 meters (33 feet) of individual beardless chinchweed plants) and with little competition from other plants; and

(C) Communities with plants for pollinator foraging and nesting within 1 kilometer (0.62 miles) of beardless chinchweed populations.

(ii) 1,158 to 1,737 meters (3,799 to 5,699 feet) elevation.

(iii) Eroding limestone or granite bedrock substrate.

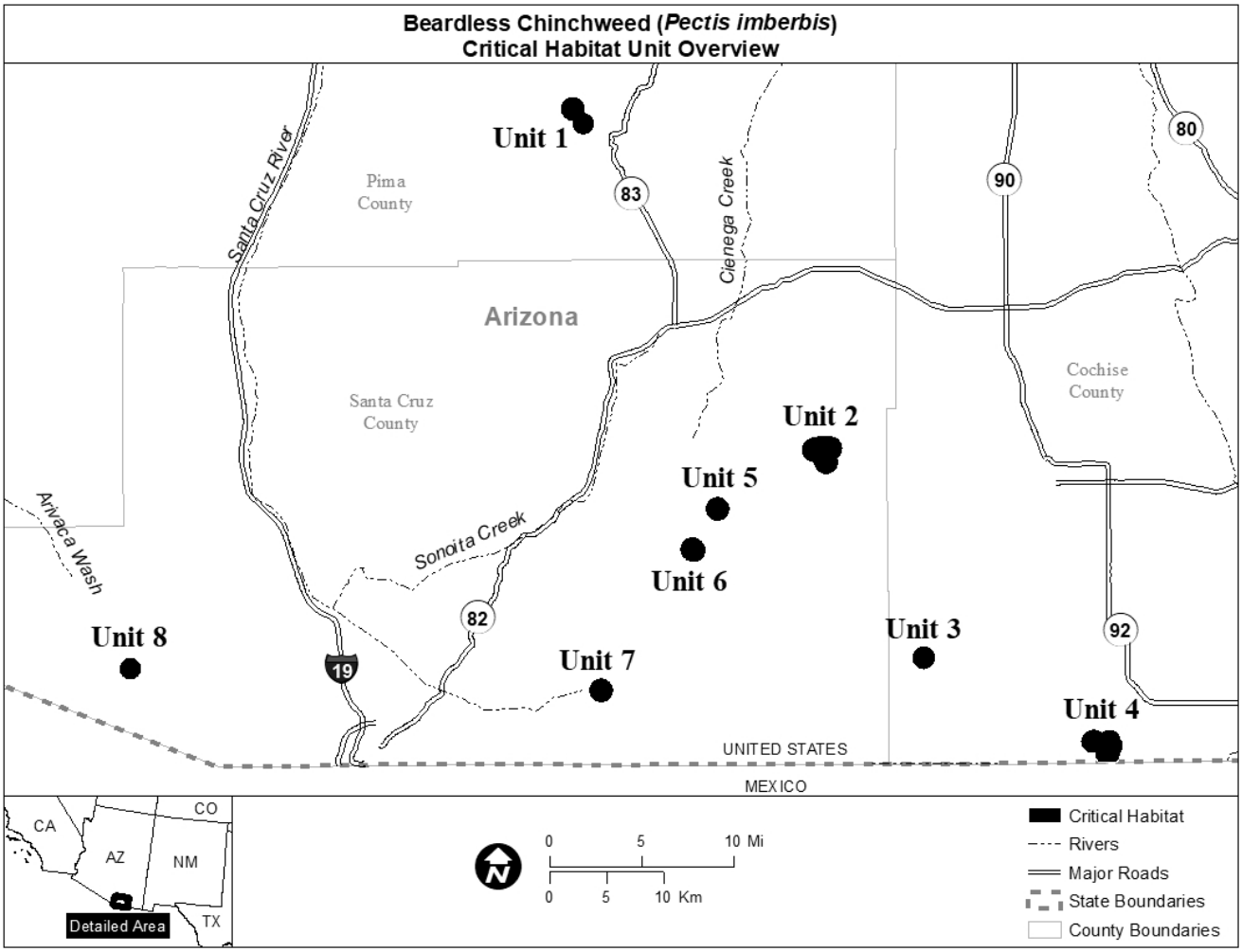
(iv) Steep, south-facing, sunny to partially shaded hillslopes.

(v) The presence of pollinators (i.e., flies, bees, and butterflies).

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of the rule.

(4) Data layers defining map units were created using ArcMap version 10 (Environmental Systems Research Institute, Inc.), a geographic information systems program on a base of USA Topo Maps. Critical habitat units were then mapped using NAD 1983, Universal Transverse Mercator (UTM) Zone 12N coordinates. The maps in this entry, as modified by any accompanying regulatory text, establishes the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service's Internet site at *https://www.fws.gov/southwest/es/arizona/Docs_Species.htm* and at *http://www.regulations.gov* at Docket No. FWS–R2–ES–2018–0104, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

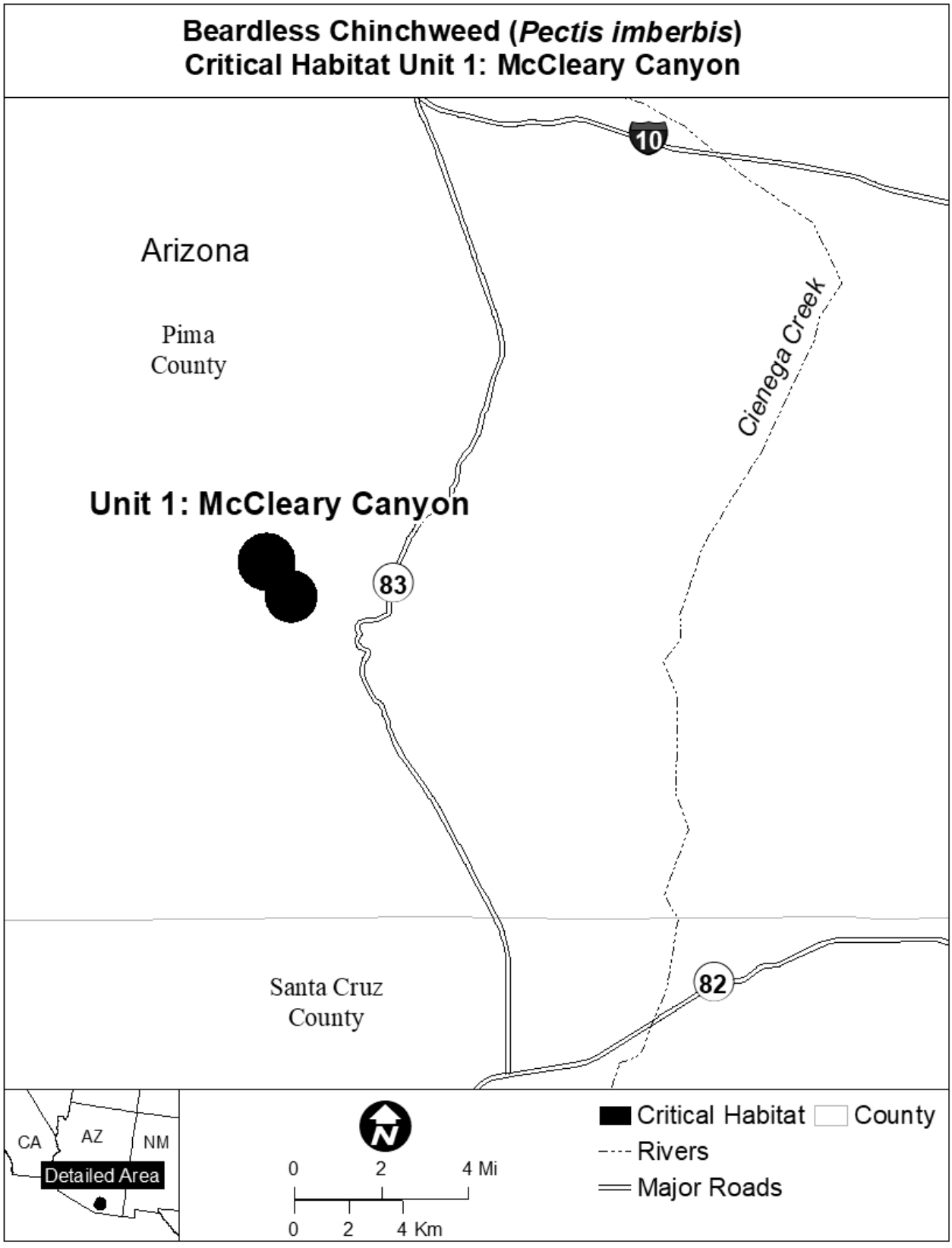
(5) Note: Index map follows:



(6) Unit 1: McCleary Canyon, Pima County, Arizona.

(i) Unit 1 consists of 682 hectares (1,686 acres) of U.S. Forest Service lands.

(ii) Map of Unit 1 follows:

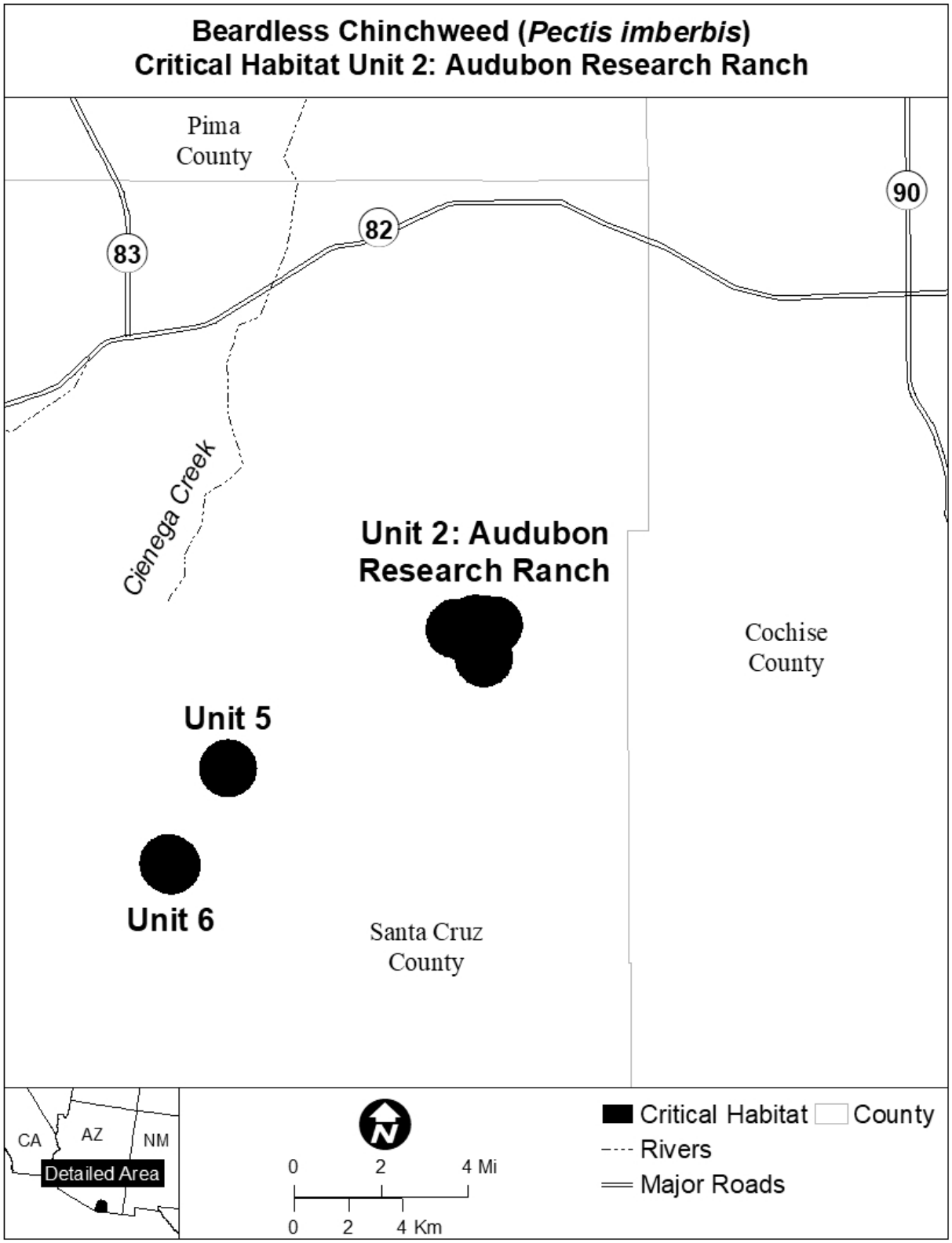


(7) Unit 2: Audubon Research Ranch, Santa Cruz County, Arizona.

(i) Unit 2 consists of 926 hectares (2,287 acres) of land, of which 331 hectares (817 acres) are owned by the U.S. Forest Service, 474 hectares (1,170 acres) by the Bureau of Land

Management, and 121 hectares (300 acres) by the Audubon Research Ranch.

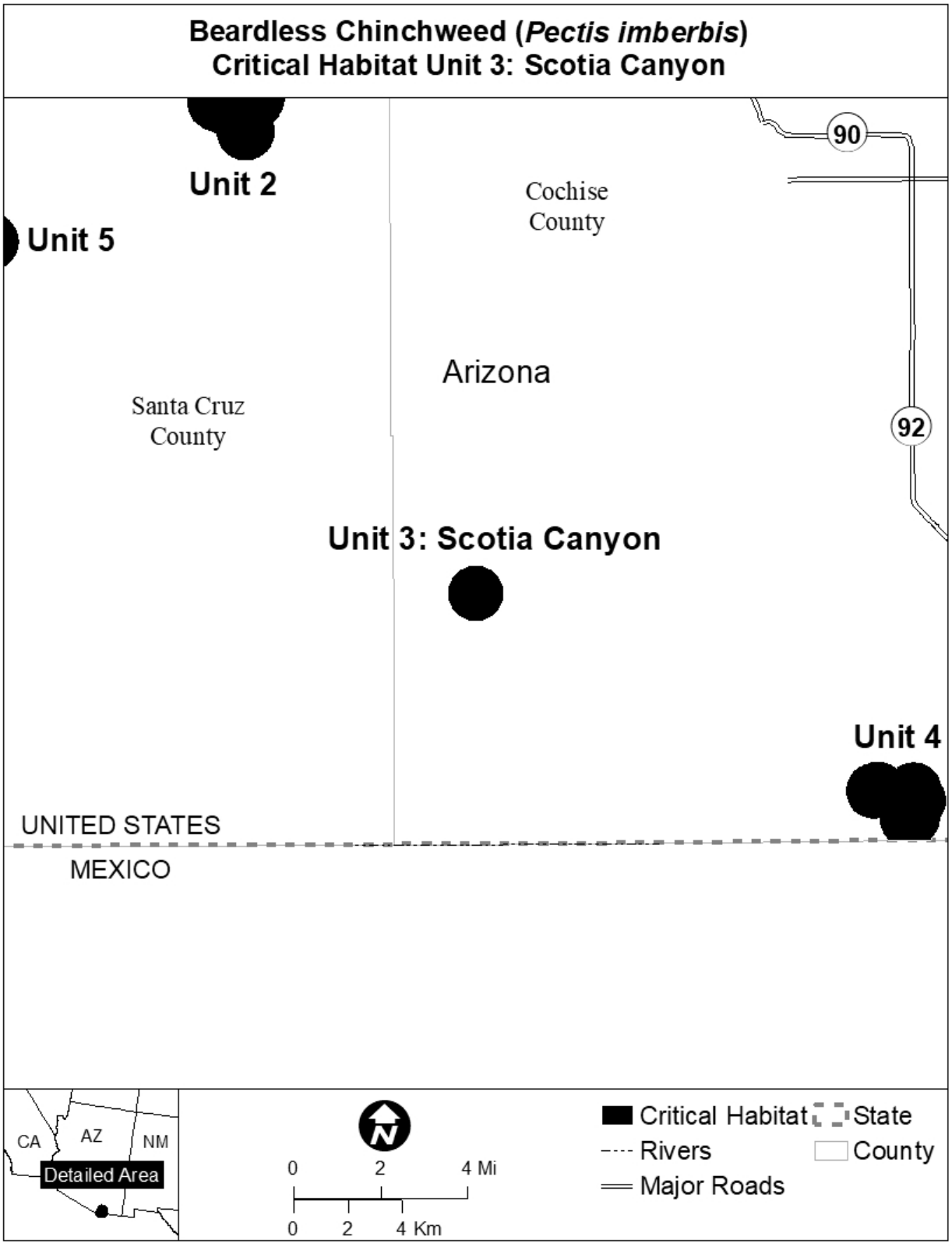
(ii) Map of Unit 2 follows:



(8) Unit 3: Scotia Canyon, Cochise County, Arizona.

(i) Unit 3 consists of 346 hectares (855 acres) of U.S. Forest Service lands.

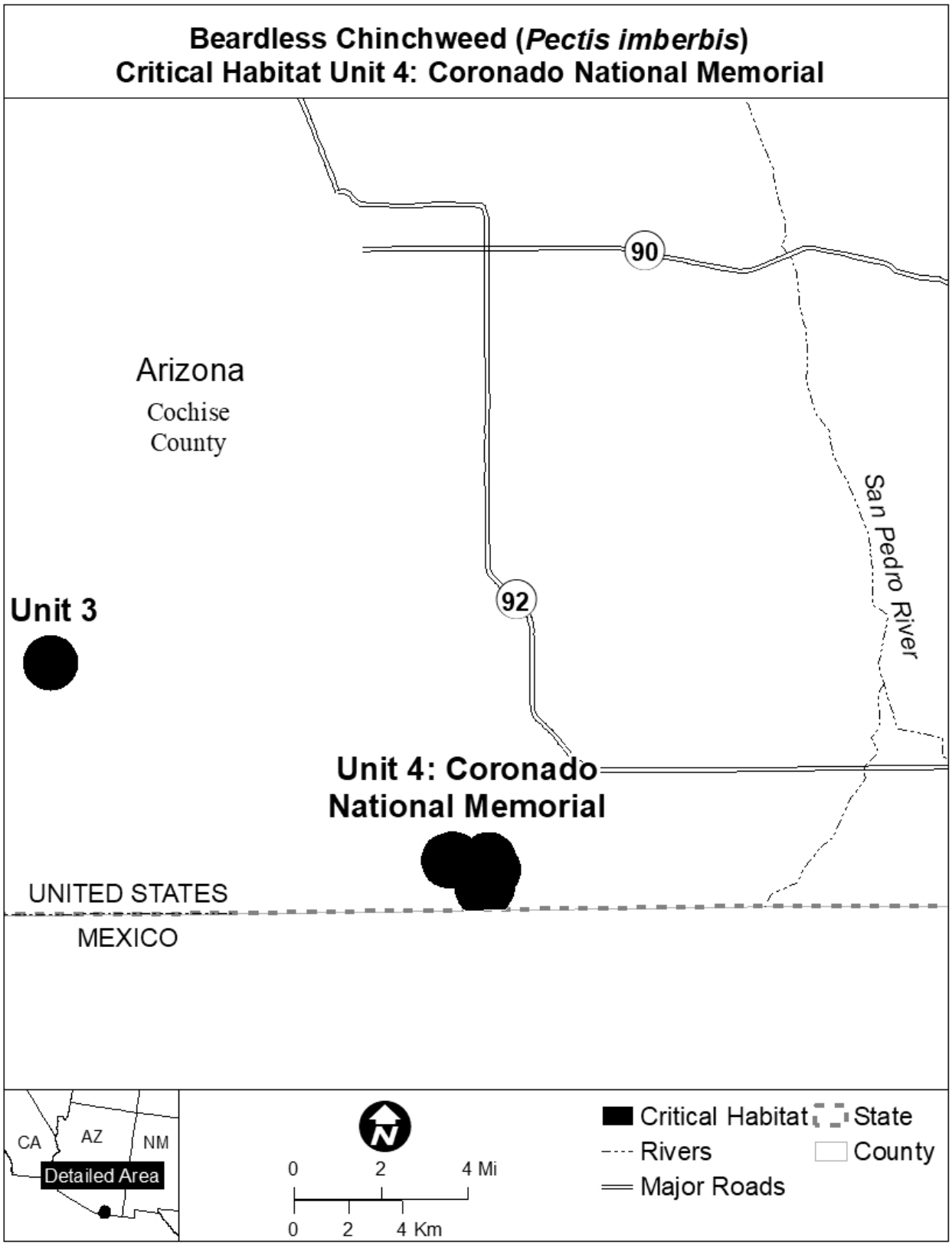
(ii) Map of Unit 3 follows:



(9) Unit 4: Coronado National Memorial, Cochise County, Arizona.

(i) Unit 4 consists of 853 hectares (2,109 acres) of National Park Service lands.

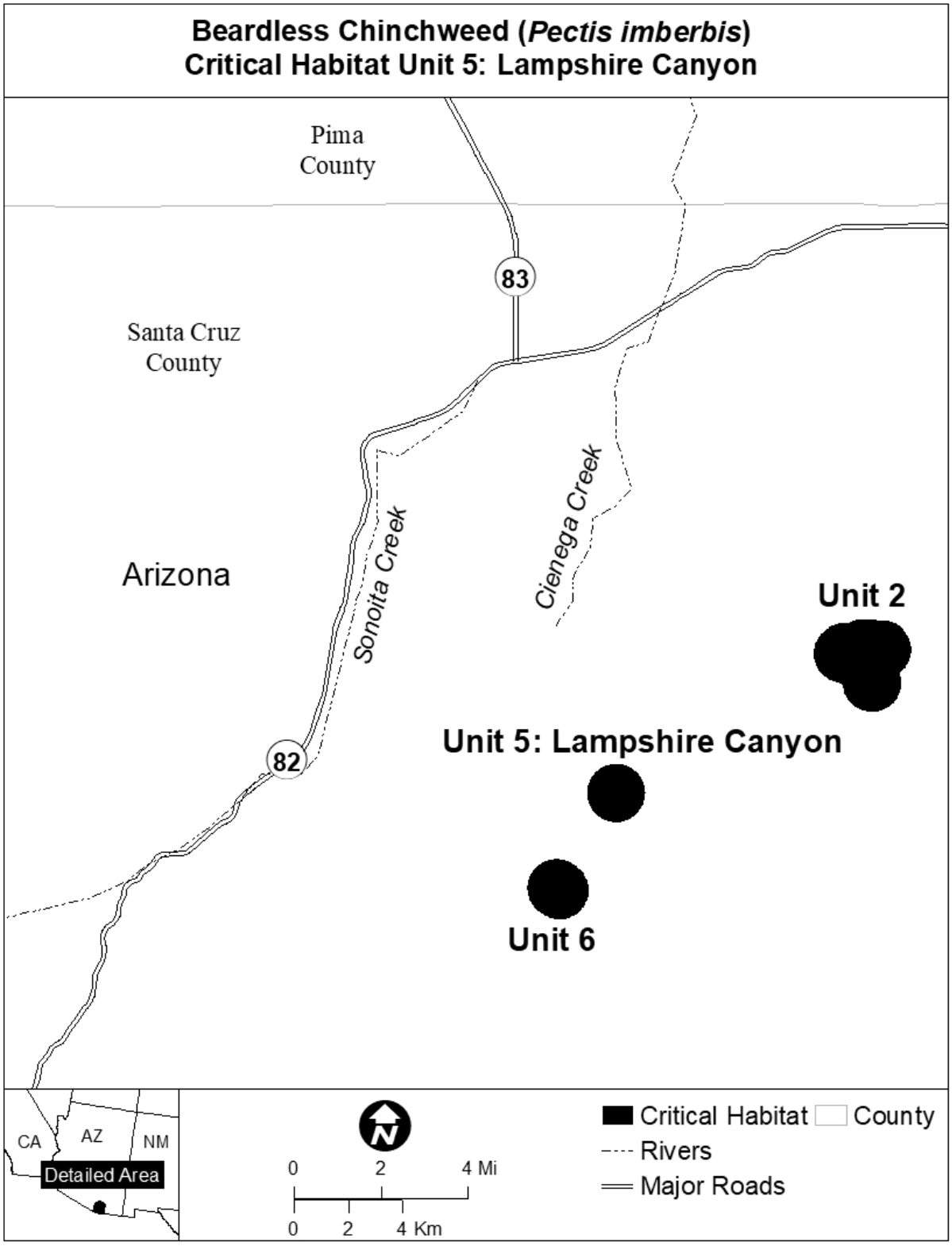
(ii) Map of Unit 4 follows:



(10) Unit 5: Lampshire Well, Santa Cruz County, Arizona.

(i) Unit 5 consists of 380 hectares (939 acres) of U.S. Forest Service lands.

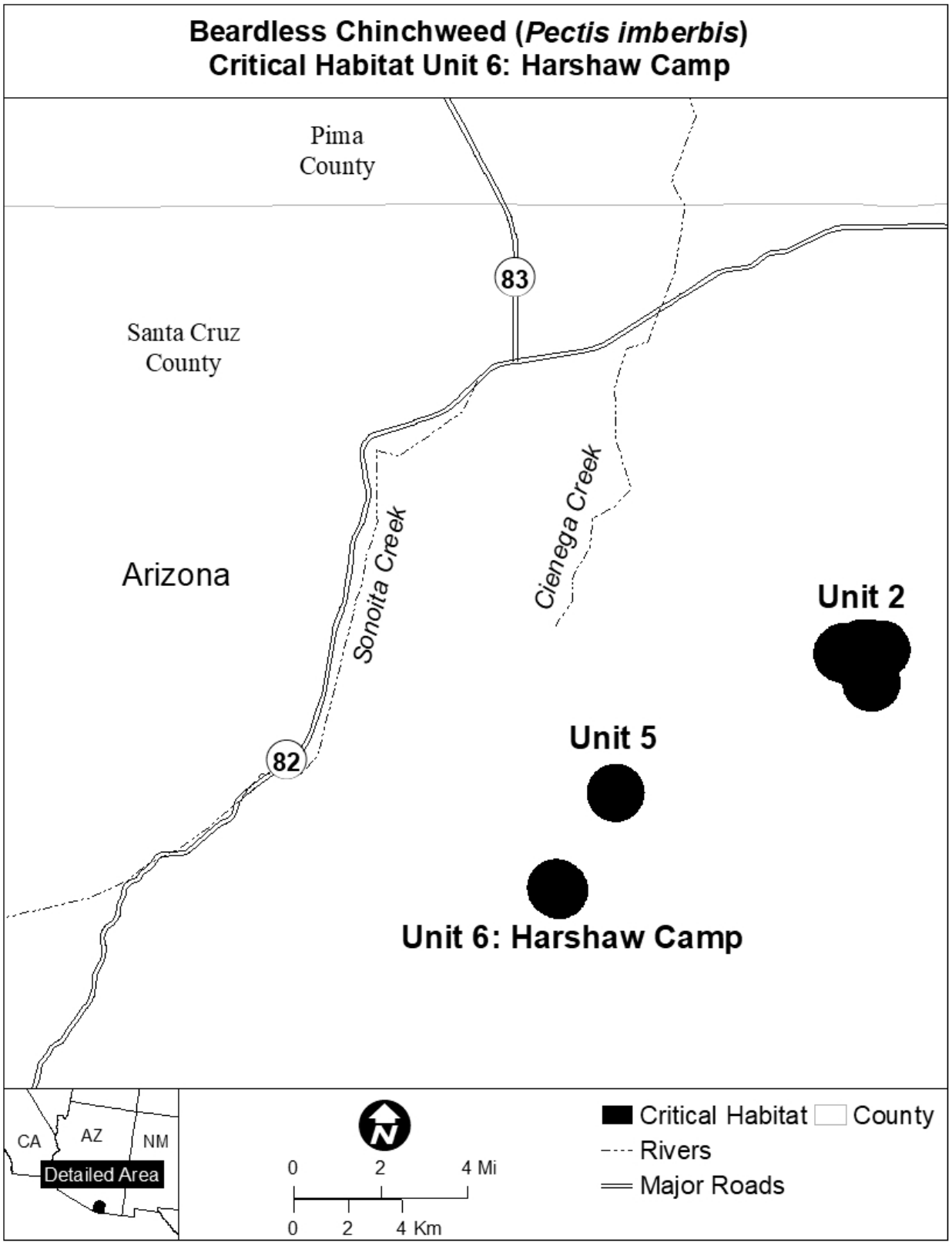
(ii) Map of Unit 5 follows:



(11) Unit 6: Harshaw Creek, Santa Cruz County, Arizona.

(i) Unit 6 consists of 410 hectares (1,013 acres) of U.S. Forest Service lands.

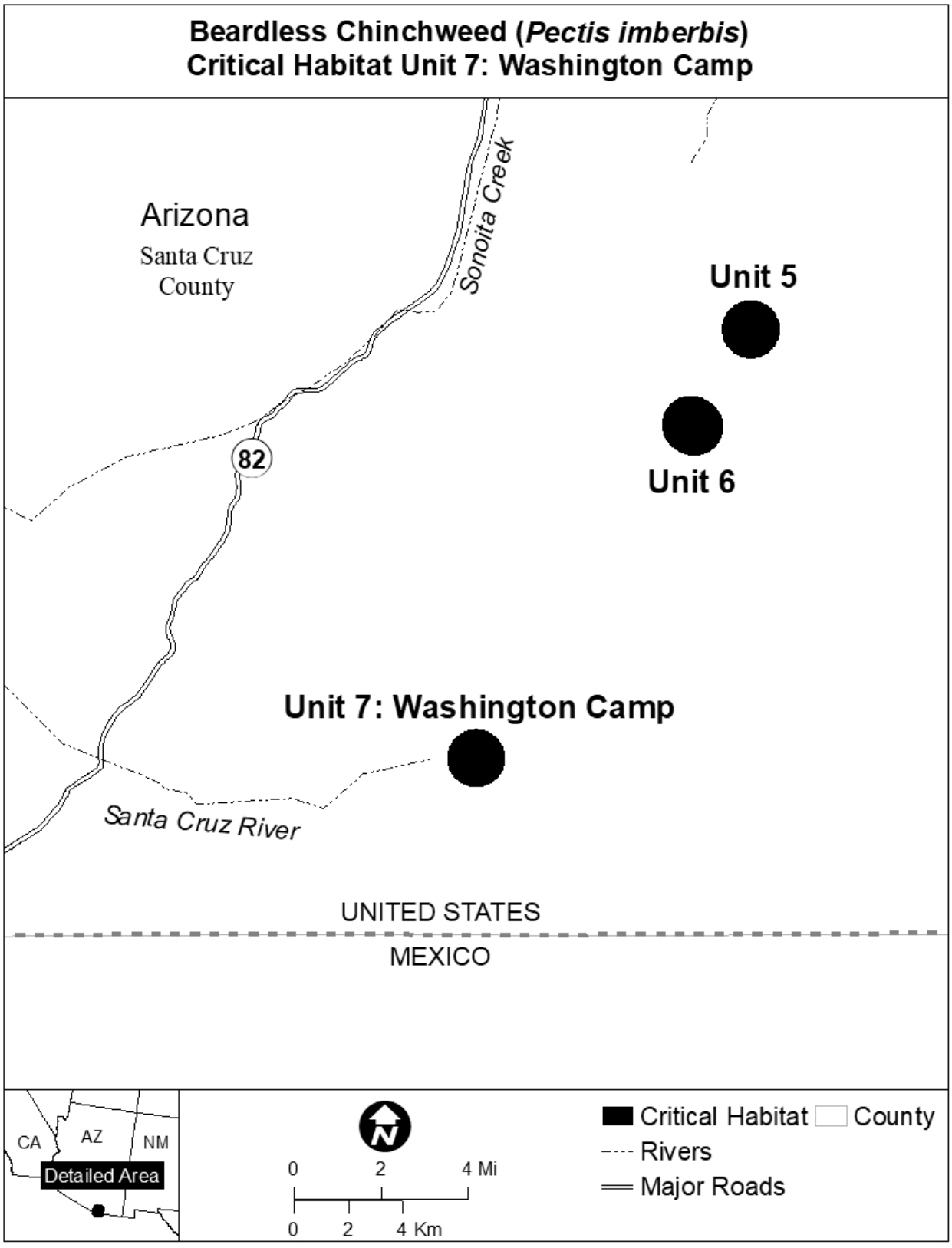
(ii) Map of Unit 6 follows:



(12) Unit 7: Washington Camp, Santa Cruz County, Arizona.

(i) Unit 7 consists of 380 hectares (939 acres) of U.S. Forest Service lands.

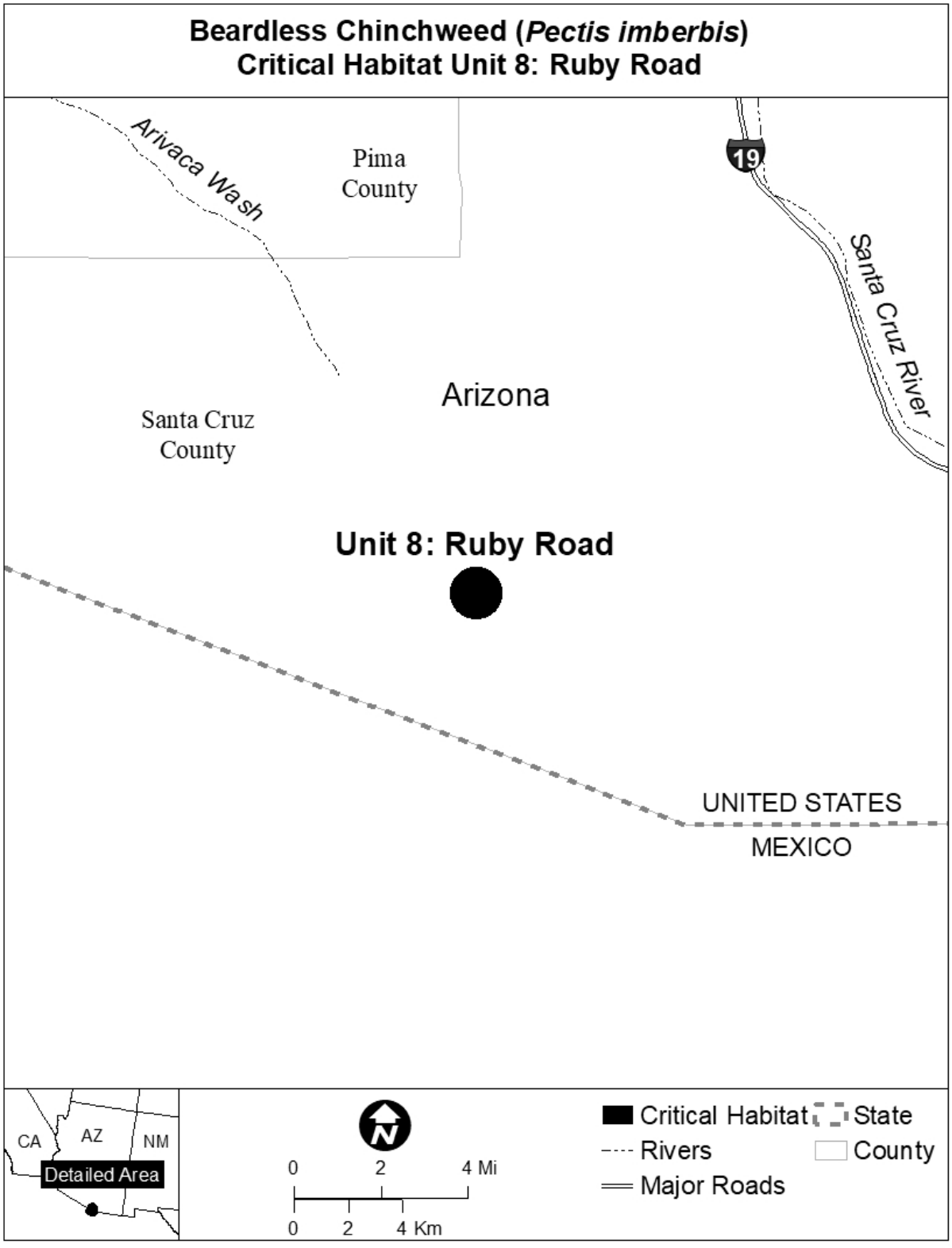
(ii) Map of Unit 7 follows:



(13) Unit 8: Ruby Road, Santa Cruz County, Arizona.

(i) Unit 8 consists of 314 hectares (776 acres) of U.S. Forest Service lands.

(ii) Map of Unit 8 follows:



* * * * *

Martha Williams
Principal Deputy Director
Exercising the Delegated Authority of the Director
U.S. Fish and Wildlife Service

[FR Doc. 2021-12005 Filed: 6/14/2021 8:45 am; Publication Date: 6/15/2021]